Pioneer sound.vision.soul

PION-06144

Service Manual

DVR-5100H-S

ORDER NO.
RRV2861

DVD RECORDER

DVR-5100H-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Serial No. Confirm 3rd & 4th alphabetical letters.
DVR-5100H-S	WY	AC220-240V	2	&&TT######$$
DVR-5100H-S	WYXU	AC220-240V	2	&&PG######$$
DVR-5100H-S	WVXU	AC220-240V	2	&&PG######$$

- **When servicing this model, some service procedures may reset the settings that customer set (*) to the factory default settings. Make sure to explain this to the customer.**

(*) : Initial Setup (Clock Setting, Remote Control Set, Channel settings, Video Out settings, Audio In settings, Audio Out settings, Language settings)

Refer to the chapter 13 of the Operating Instructions for more details.

An HDD (Hard Disc Drive) is mounted in this product.
The HDD is a precision instrument very vulnerable to shock and electrostatic charges.
Please read "7.6 Cautions on Handling the HDD" in this manual and exercise sufficient caution when handling the HDD itself, as well as the product with the HDD built in.
When an HDD becomes defective and inoperable, restoration of the user's data recorded on the HDD, or copying of the user's recorded data to other media (such as a new HDD) is totally impossible. Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
The user must be made aware that all recorded data are deleted if the HDD is intialized.

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936

T-ZZE DEC. 2003 printed in Japan

SAFETY INFORMATION

LITHIUM BATTERY NOTICE

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

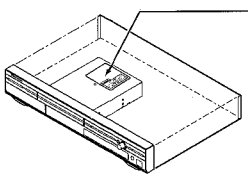
When replacing the lithium batteries, follow the note below. Dispose of the used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.
The battery used in this device may present a fire or chemical hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate. Replace only with the same Part Number. Use of another battery may present a risk of fire or explosion.

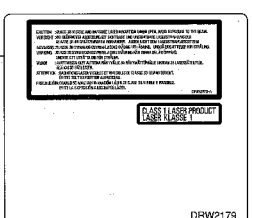
Note : The lithium battery installation position is shown in the exploded views.

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

LASER
Picture 1
Warning sign for laser radiation

■ LABEL CHECK





DRW2179

IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER : 50 mw
WAVELENGTH : 658 nm

Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the test mode.

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

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1. SPECIFICATIONS

Specifications

General

System ..... HDD, DVD-Video, DVD-R/RW, Video-CD, CD, CD-R/RW (WMA, MP3, JPEG, CD-DA)
Power requirements ..... 220–240 V, 50/60 Hz
Power consumption ..... 48 W
Power consumption in standby mode ..... 0.7 W (FL off)
Weight ..... 5.1 kg
Dimensions ..... 420 (W) x 69 (H) x 341 (D) mm
Operating temperature ..... +5°C to +35°C
Operating humidity ..... 5% to 85% (no condensation)
TV system ..... PAL/SECAM/NTSC (external input only)

Recording

Recording format ..... DVD Video Recording DVD-VIDEO

Recordable discs
DVD-RW (DVD Re-recordable disc)
DVD-R (DVD Recordable disc)

Video recording format
Sampling frequency 13.5MHz
Compression format ..... MPEG

Audio recording format
Sampling frequency 48kHz
Compression format ..... Dolby Digital or Linear PCM (uncompressed)

Recording time

HDD
Fine (FINE) ..... Approx. 17 hours
Standard Play (SP) ..... Approx. 34 hours
Long Play (LP) ..... Approx. 68 hours
Extended Play (EP) ..... Approx. 102 hours
Manual Mode (MN) ..... Approx. 17–102 hours

DVD-R/DVD-RW
Fine (FINE) ..... Approx. 1 hour
Standard Play (SP) ..... Approx. 2 hours
Long Play (LP) ..... Approx. 4 hours
Extended Play (EP) ..... Approx. 6 hours
Manual Mode (MN) ..... Approx. 1–8 hours

Tuner

Receivable channels

	PAL B/G		PAL I	
	Frequency	Channel	Frequency	Channel
VHF (low)	48 - 82 MHz	E2 - E4 A - Z	46 - 64 MHz	A - C X - Z
VHF (high)	104 - 300 MHz	E5 - E12 S1 - S39 M1 - M10 U1 - U10	76 - 292 MHz	D - J 11, 13 S1 - S20
Hyper	302 - 470 MHz	S21 - S41	302 - 470 MHz	S21 - S41
UHF	470 - 862 MHz	E21 - E69	470 - 862 MHz	E21 - E69

	SECAM L		SECAM D/K	
	Frequency	Channel	Frequency	Channel
VHF (low)	49 - 82 MHz	E2 - 4	48 - 64 MHz 76 - 94 MHz	R1 - R5 2
VHF (high)	104 - 300 MHz	E5 - 10 B - Q	84 - 300 MHz	R6 - R12 S1 - S20
Hyper	306 - 470 MHz	S21 - S41	306 - 470 MHz	S21 - S41
UHF	470 - 862 MHz	21 - 69	470 - 862 MHz	E21 - E69

STEREO
B/G - A2
I - NICAM
L - NICAM
B/G - NICAM
D/K - NICAM

Timer

Programs ..... 1 month/32 programs
Clock ..... Quartz lock (24-hour digital display)
Power off memory ..... Approx. 5 years (after manufacture)

Input/Output

VHF/UHF antenna input/output terminal ..... VHF/UHF set 75 Ω (IEC connector)
Video input ..... Input 1, 3 (rear), 2 (front)
Input level ..... 1 Vp-p (75 Ω)
Jacks ..... AV connector 2 (Input 1), RCA jack (Input 2, 3)
Video output ..... Output 1,2
Output level ..... 1 Vp-p (75 Ω)
Jacks ..... AV connector (Output 1) RCA jack (Output 2)
S-Video input ..... Input 1, 3 (rear), 2 (front)
Y (luminance) - Input level ..... 1 Vp-p (75 Ω)
C (colour) - Input level ..... 286 mVp-p (75 Ω)
Jacks ..... AV connector 2 (Input 1), 4 pin mini DIN (Input 2,3)
S-Video output ..... Output 1,2
Y (luminance) - Output level ..... 1 Vp-p (75 Ω)
C (colour) - Output level ..... 286 mVp-p (75 Ω)
Jacks ..... AV connector 1 (Output 1), 4 pin mini DIN (Output 2)

Audio input ..... Input 1, 3 (rear), 2 (front) L/R
Input level
During audio input ..... 2V rms
(Input impedance: more than 22 kΩ)
Jacks ..... AV connector 2 (Input 1),
RCA jacks (Inputs 2,3)
Audio output ..... Output 1,2 L/R
During audio output ..... 2V rms
(Output impedance: less than 1.5 kΩ)
Jacks ..... AV connector 1 (output 1),
RCA jacks (output 2)
Control input ..... Mini jack
DV input/output ..... 4 pin
(i.LINK/IEEE 1394 standard)

AV Connectors (21-pin connector assignment)

AV connector input/output ..... 21-pin connector
This connector provides the video and audio signals for connection to a compatible colour TV or monitor.

PIN no.
1 ..... Audio 2/R out
11 ..... G* out
3 ..... Audio 1/L out
15 ..... R* or C* out
4 ..... GND
17 ..... GND
7 ..... B* out
19 ..... Video out or Y* out
8 ..... Status
21 ..... GND
* AV CONNECTOR 1(RGB)-TV is output

Supplied accessories

Remote control 1
Dry cell batteries (AA/R6P) 2
Audio / Video cable (red/white/yellow) 1
RF antenna cable 1
Power cable 1
Operating Instructions 1
Warranty card 1

Note: The specifications and design of this product are subject to change without notice, due to improvement.

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"DTS" and "DTS Digital Out" are registered trademarks of Digital Theater Systems, Inc.

A

B

C

D

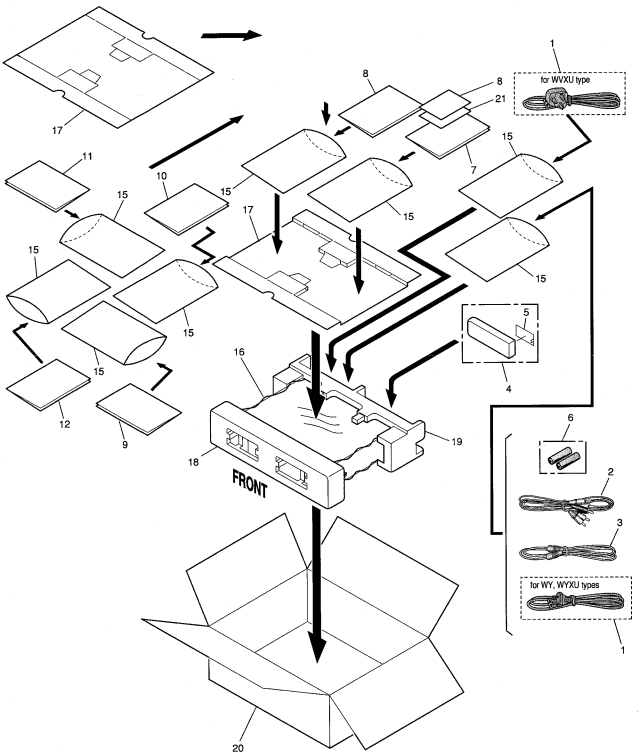
E

F

2. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

2.1 PACKING



PACKING parts List

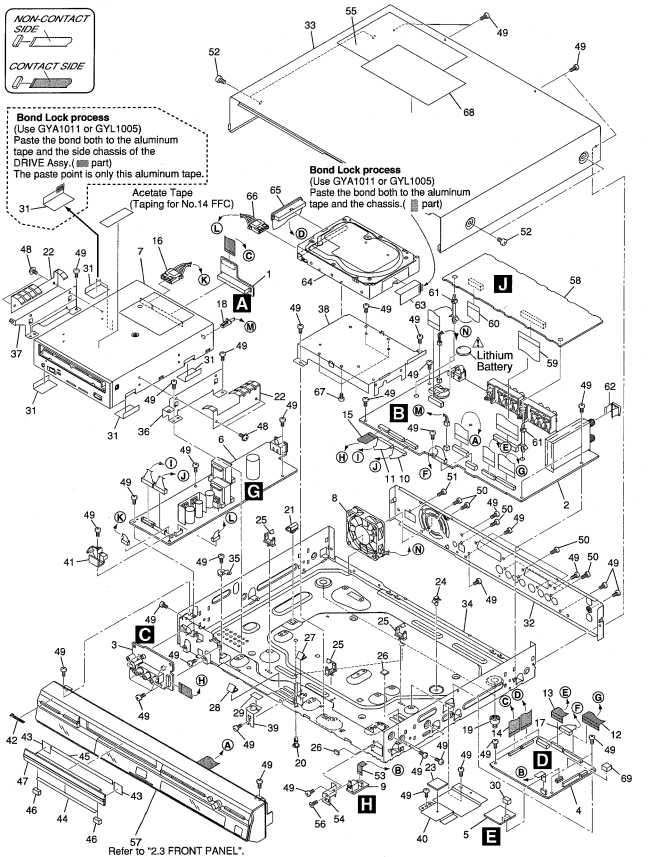
Mark	No.	Description	Part No.
⚠	1	Power Cable	See Contrast table(2)
	2	Audio/Video Cable	See Contrast table(2)
	3	RF Antenna Cable	VDE1075
	4	Remote Control	See Contrast table(2)
	5	Battery Cover	AZN7933
NSP	6	Dry Cell Batteries (AA/R6P)	See Contrast table(2)
	7	Operating Instructions (English)	See Contrast table(2)
	8	Operating Instructions (French)	See Contrast table(2)
	9	Operating Instructions (German)	See Contrast table(2)
	10	Operating Instructions (Italian)	See Contrast table(2)
	11	Operating Instructions (Dutch)	See Contrast table(2)
	12	Operating Instructions (Spanish)	See Contrast table(2)
NSP	13	Warranty Card	ARY7065
	14	•••••••	
	15	Polyethylene Bag	VHL1051
	16	Mirror Sheet	VHL1006
	17	Accessory Case	VHC1112
	18	Front Pad	See Contrast table(2)
	19	Rear Pad	See Contrast table(2)
	20	Packing Case	See Contrast table(2)
NSP	21	HDD Caution 8L	VRR1047

(2) CONTRAST TABLE

DVR-5100H-S/WY, WYXU and WVXU are constructed the same except for the following :

Mark	No.	Symbol and Description	DVR-5100H-S /WY	DVR-5100H-S /WYXU	DVR-5100H-S /WVXU
⚠	1	Power Cable	ADG1154	ADG1154	ADG1156
	2	Audio/Video Cable	XDE3049	VDE1077	VDE1077
	4	Remote Control	VXX2889	VXX2889	VXX2888
NSP	6	Dry Cell Batteries (AA/R6P)	VEM1031	VEM1030	VEM1030
	7	Operating Instructions (English)	VRB1317	VRB1317	VRB1319
	8	Operating Instructions (French)	VRE1102	VRE1102	Not used
	9	Operating Instructions (German)	VRE1104	VRE1104	Not used
	10	Operating Instructions (Italian)	VRE1106	VRE1106	Not used
	11	Operating Instructions (Dutch)	VRE1108	VRE1108	Not used
	12	Operating Instructions (Spanish)	VRE1110	VRE1110	Not used
	18	Front Pad	VHA1348	VHA1346	VHA1346
	19	Rear Pad	VHA1349	VHA1347	VHA1347
	20	Packing Case	VHG2447	VHG2424	VHG2423

2.2 EXTERIOR


NON-CONTACT SIDE
CONTACT SIDE
Bond Lock process
(Use GYA1011 or GYL1005)
Paste the bond both to the aluminum tape and the side chassis of the DRIVE Assy.(part)
The paste point is only this aluminum tape.
Acetate Tape
(Taping for No.14 FFC)
Bond Lock process
(Use GYA1011 or GYL1005)
Paste the bond both to the aluminum tape and the chassis.(part)
Lithium Battery
Refer to "2.3 FRONT PANEL".

EXTERIOR parts List

Mark	No.	Description	Part No.
	1	ATAB ASSY	VWV1968
	2	TUJB ASSY	VWV1962
	3	FRJB ASSY	VWV1965
	4	MAIN ASSY	VWV1955
	5	MHLP ASSY	VWV1991
⚠	6	POWER SUPPLY UNIT	VWR1374
	7	DRIVE ASSY R6	VXX2898
	8	DC FAN Motor	VXM1109
	9	DVJB ASSY	VWV1967
	10	Connector Assy	PF08EE-D25
	11	Connector Assy	PF13PP-D25
	12	Flexible Cable (32P)	VDA1975
	13	Flexible Cable (21P)	VDA1976
	14	Flexible Cable (40P)	VDA1977
	15	Flexible Cable (15P)	VDA1980
	16	Housing Assy (4P)	VKP2313
	17	Housing Assy (8P)	VKP2314
	18	Housing Assy (2P)	VKP2315
	19	Leg Assy	AEC7113
NSP	20	PCB Holder	PNW1706
NSP	21	P. Plate Holder	PNY-405
	22	Earth Plate	VBK1148
	23	Radiation Sheet	VEB1360
	24	Card Spacer	VEC1708
NSP	25	Clamp	VEC2362
	26	Heatsink Cushion	VEC2363
	27	Gasket A	VEC2382
	28	Gasket B	VEC2393
	29	Gasket Sheet	VEC2394
	30	M Cushion A	VEC2398
	31	Aluminum tape	VEF1056
	32	Rear Panel	See Contrast table(2)
	33	Bonnet Case	VXX2897
NSP	34	Base Chassis	See Contrast table(2)
	35	PCB Base	VNE2278

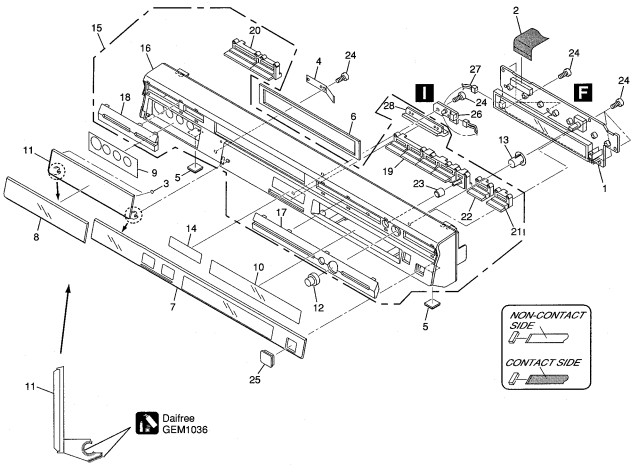
Mark	No.	Description	Part No.
NSP	36	Writer Stay R	VNE2318
NSP	37	Writer Stay L	VNE2319
NSP	38	HDD Stay	VNE2320
NSP	39	Bonnet Angle	VNE2321
NSP	40	Heatsink	VNH1070
	41	Cable Holder	VNK5330
	42	Pioneer Name Plate	VAM1136
	43	Tray Sheet A	VEC2346
	44	Tray Sheet B	VEC2358
	45	Tray Sheet C	VEC2395
	46	Tray Sheet D	VEC2396
	47	Tray Panel Assy	VXA2602
	48	Screw	AMZ30P060FMC
	49	Screw	BBZ30P060FMC
	50	Screw	BPZ30P080FZK
	51	Screw	PPZ30P080FMC
	52	Screw	BCZ40P060FNI
	53	Flexible Cable (7P)	VDA1979
NSP	54	DV Angle	VNE2322
	55	Bonnet Label	See Contrast table(2)
	56	Screw	VBA1088
NSP	57	Front Panel Assy	See Contrast table(2)
	58	SCRB ASSY	VWV1958
	59	Flexible Cable(35P)	VDA1982
	60	Flexible Cable(15P)	VDA1983
NSP	61	Spacer 40	PNW2488
	62	Earth Plate	VBK1149
	63	Aluminum tape B	VEF1057
	64	HDD 80G 4R080L0 SV	VXF1010
	65	ATA Assy	VWX1232
	66	Housing Assy (4P)	VKP2317
	67	#6-32 Screw	DBA1125
NSP	68	HDD Caution 8L B	VRR1046
	69	M Cushion B	VEC2397

(2) CONTRAST TABLE

DVR-5100H-S/WY, WYXU and WVXU are constructed the same except for the following :

Mark	No.	Symbol and Description	DVR-5100H-S /WY	DVR-5100H-S /WYXU	DVR-5100H-S /WVXU
	32	Rear Panel	VNA2675	VNA2611	VNA2611
NSP	34	Base Chassis	VNB1040	VNB1039	VNB1039
	55	Bonnet Label	VRW1995	VRW1995	VRW1993
NSP	57	Front Panel Assy	VXA2635	Not used	Not used
		(WYXU and WVXU types are individual parts.)			

2.3 FRONT PANEL



FRONT PANEL parts List

Mark	No.	Description	Part No.
	1	FLKY ASSY	VWG2444
	2	Flexible Cable (19P)	VDA1974
	3	Rubber Sheet	AEB7054
	4	Door Spring	VBK1144
	5	Rubber Foot	VEB1349
	6	Drive Sheet	VEC2345
	7	FL Lens	VEC2380
	8	Door Lens	See Contrast table(2)
	9	Jack Sheet	VEC2381
	10	FL Filter	VEC2354
	11	Jack Door	VNK5309
	12	JOG Dial S	VNK5316
	13	JOG Base	VNK5317
	14	Hologram Label	VRW1962
	15	Front Panel Assy	VXA2617
NSP	16	Front Panel	VNK5362
	17	Front Cover R	VNK5360
	18	Front Cover L	VNK5359
	19	Main Key S	VNK5312
	20	Power Key S	VNK5313
	21	Rec Key	VNK5314
	22	Stop Key S	VNK5315
	23	Function Cover	VNK5318
	24	Screw	BPZ30P080FZK
	25	DV Cover	VNK5355
	26	LEDB ASSY	VWG2434
	27	Housing Assy(2P)	VKP2318
NSP	28	LED Lens	VNK5325

(2) CONTRAST TABLE

DVR-5100H-S/WY, WYXU and WVXU are constructed the same except for the following :

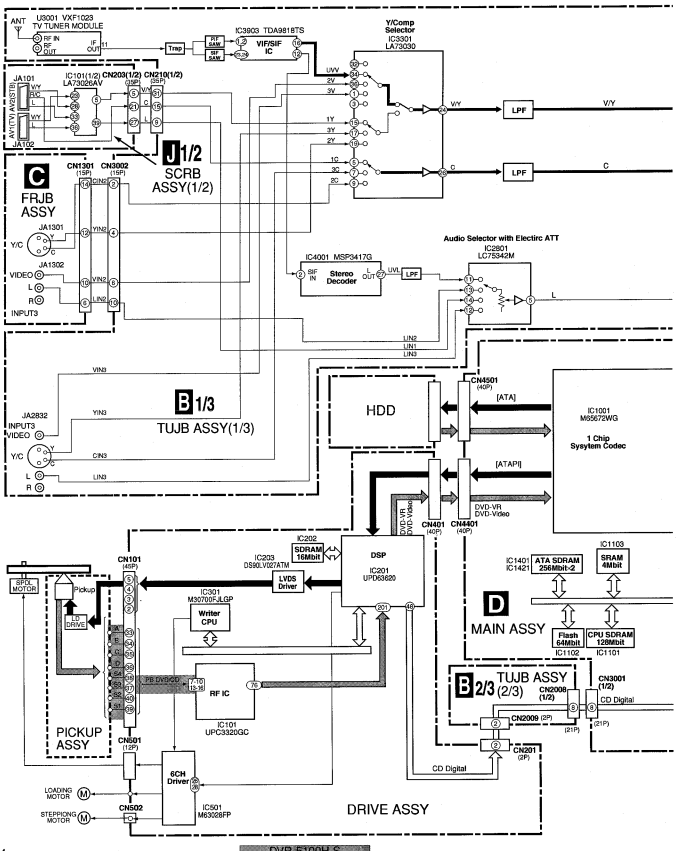
Mark	No.	Symbol and Description	DVR-5100H-S /WY	DVR-5100H-S /WYXU	DVR-5100H-S /WVXU
	8	Door Lens	VEC2377	VEC2377	VEC2376

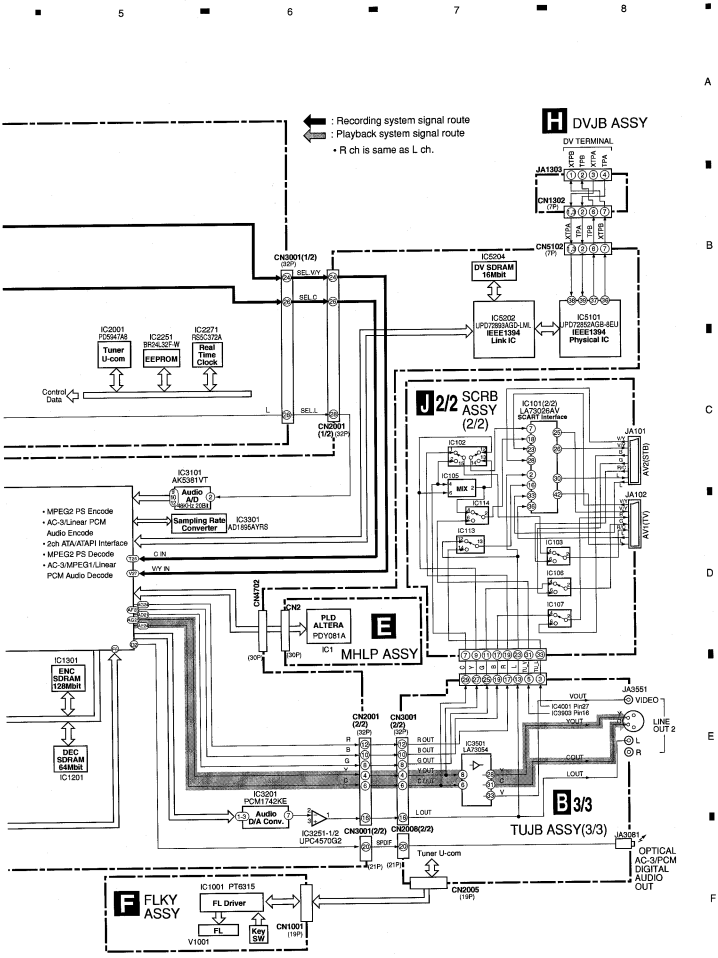
5 6 7 8

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

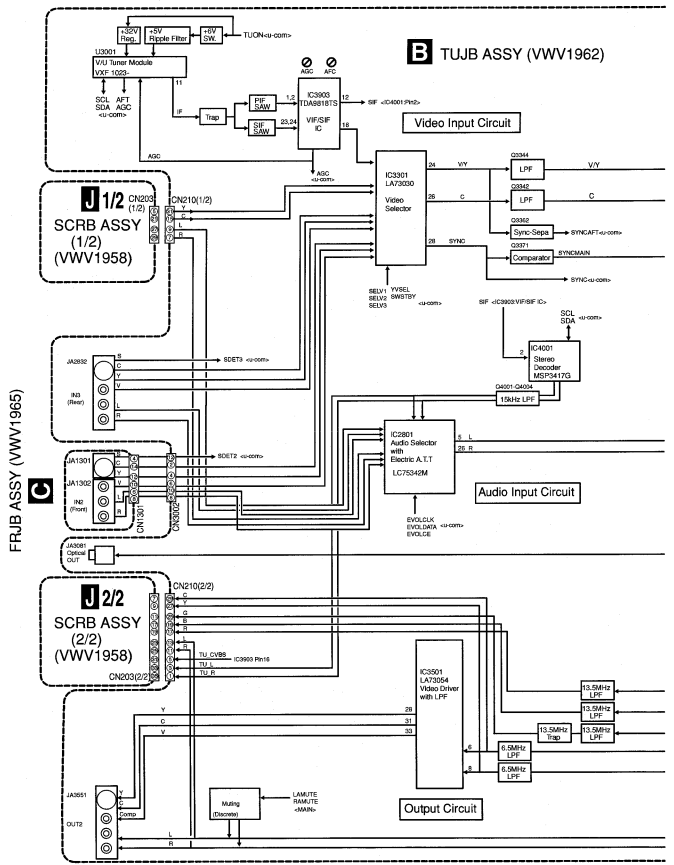
3.1 BLOCK DIAGRAM

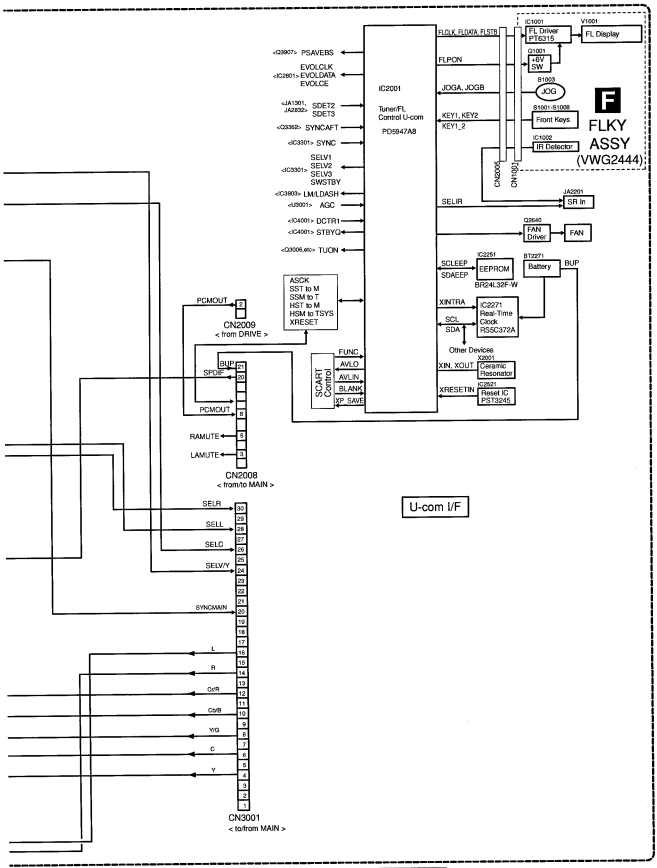
3.1.1 OVERALL BLOCK DIAGRAM



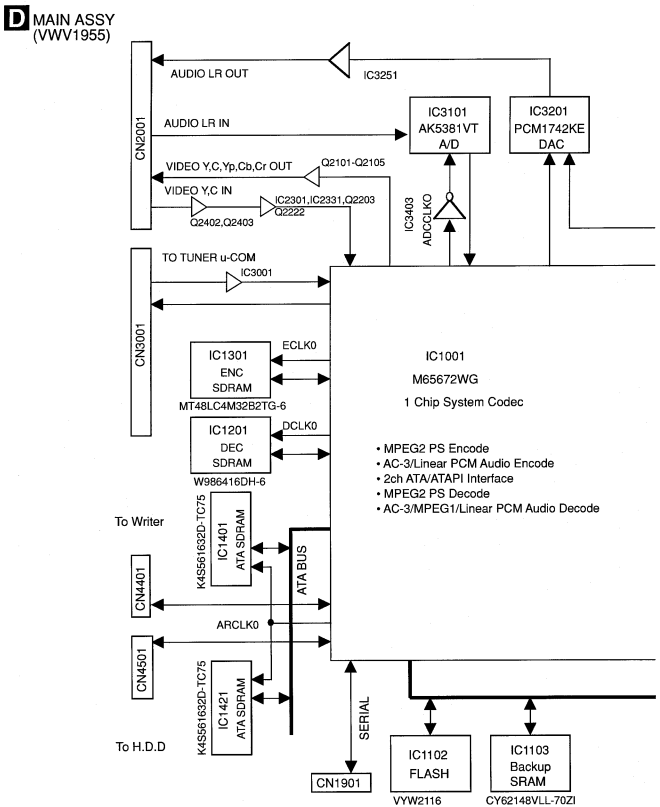

: Recording system signal route
: Playback system signal route
• R ch is same as L ch.
H DVJB ASSY
DV TERMINAL
JA1303
CN1302 (7P)
CN5102 (7P)
CN3001(1/2) (80P)
SEL W/Y
SEL C
IC5204 DV SDRAM 16Mbit
IC5202 UPD72893GD-LML IEEE1394 Link IC
IC5101 UPD72852GA-8EU IEEE1394 Physical IC
IC2001 PD64748 Tuner U-com
IC2251 BR24L32F-W EEPROM
IC2271 RS5C372A Real Time Clock
Control Data
SEL L
CN2001 (1/2) (80P)
J 2/2 SCRB ASSY (2/2)
IC1101(2/2) LA73026AV SCART Interface
JA101 AV1(STB)
JA102 AV1(TV)
IC102
IC105 MIX
IC114
IC113
IC103
IC106
IC107
IC3101 AK5381VT Audio A/D 24bit 192kHz 108dB
IC3301 AD1895AYRS Sampling Rate Converter
• MPEG2 PS Encode
• AC-3/Linear PCM Audio Encode
• 2ch ATA/ATAPI Interface
• MPEG2 PS Decode
• AC-3/MPEG1/Linear PCM Audio Decode
G IN
WY IN
CN4702
CN2 (30P)
PLD ALTERA PDY081A
IC1
E MHLP ASSY
IC1301 ENC SDRAM 128Mbit
DEC SDRAM 64Mbit IC1201
CN2001 (2/2) (32P)
CN3001 (2/2) (32P)
R OUT
B OUT
G OUT
V OUT
C OUT
IC3201 PCM1742KE
Audio D/A Conv.
IC3251-1/2 UPC4570G2
CN3001(2/2)
CN2006(2/2)
SFGF
LOUT
JA3551
VOUT
IC4001 Pin27 IC3903 Pin16
IC3501 LA73034
COUT
LOUT
VIDEO
LINE OUT 2
L
R
B 3/3
TUJB ASSY(3/3)
JA3081
OPTICAL
AC-3/PCM
DIGITAL
AUDIO
OUT
Tuner U-com
(21P)
CN2005 (19P)
F FLKY ASSY
IC1001 PT6315
FL Driver
FL
Key SW
CN1001 (19P)
V1001

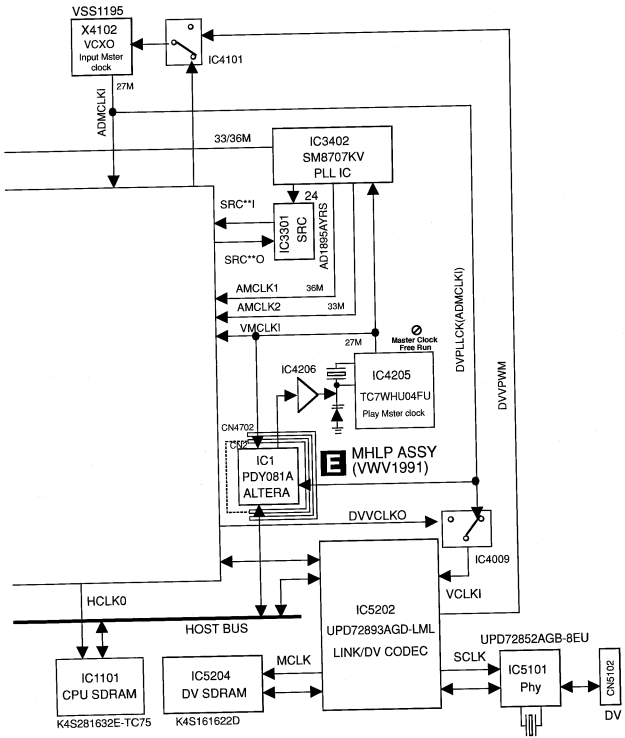
3.1.2 TUJB ASSY BLOCK DIAGRAM



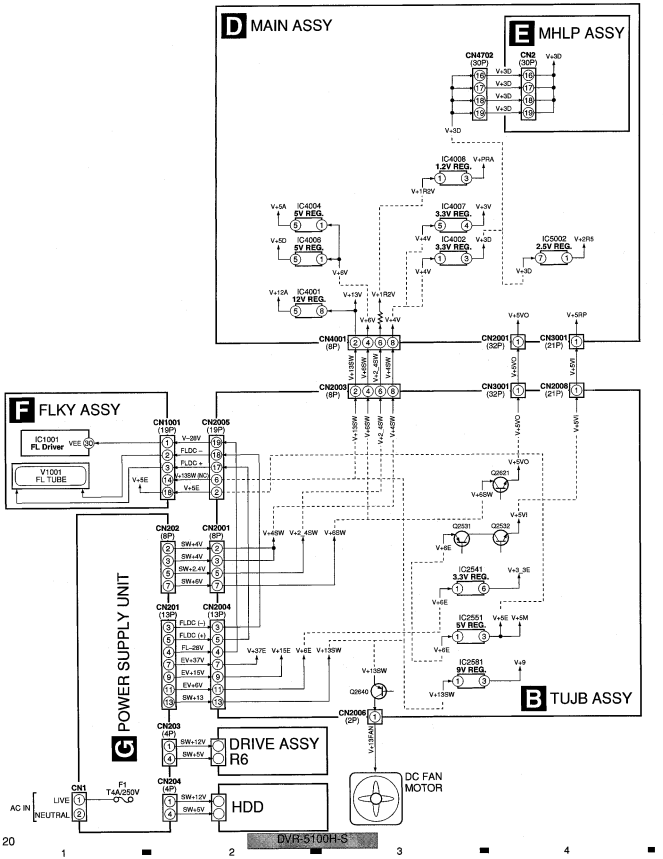

IC2001
Tuner/FL
Control U-com
PD5947A8
FLDLK, FLDATA, FLSTB
FLPON
JOGA, JOGB
KEY1, KEY2
KEY1_2
SELIR
SCLEEP
SDAEEP
XINTRA
SCL
SDA
XIN, XOUT
XRESETIN
IC2001 V1001
FL Driver PTE5315
FL Display
Q1001 +5V SW
S1003 JOG
S1001-S1008 Front Keys
IC1005 IR Detector
F
FLKY ASSY (VWG2444)
CN2005
CN1001
JA2201 SR In
Q2640 FAN Driver
FAN
IC2251 EEPROM BR24L32F-W
BT2271 Battery
BUP
IC2271 Real-Time Clock RS5C372A
Other Devices
X2001 Ceramic Resonator
IC2921 Reset IC PST3245
<Q2907> PSAVEBS
EVOLCLK
<IC2801> EVOLDATA
EVOLCE
<JA1301, JA2832> SDET2 SDET3
<Q3302> SYNCAFT
<IC3301> SYNC
SELV1
SELV2
<IC3301> SELV3
SWSTBY
<IC3903> LM/LDASH
<IC0001> AGC
<IC4001> DCTR1
<IC4001> STBYQ
<Q3006,etc> TUON
ASCK
SST to M
SSM to T
HST to M
HSM to TSYS
XRESET
SCART Control
FUNC
AVLO
AVLIN
BLANK
XP_SAVE
PCMOUT
CN2009
< from DRIVE >
BUP
SPDIF
PCMOUT
RAMUTE
LAMUTE
CN2008
< from/to MAIN >
U-com I/F
SELR
SELL
SELC
SELVY
SYNCMAIN
L
R
CVR
CVB
YYG
C
Y
CN3001
< to/from MAIN >

3.1.3 MAIN ASSY BLOCK DIAGRAM




VSS1195
X4102
VCXO
Input Mster clock
IC4101
27M
ADMCLKI
33/36M
IC3402
SM8707KV
PLL IC
24
SRC**I
IC3301
SRC
AD1895AYRS
SRC**O
AMCLK1
36M
AMCLK2
33M
VMCLKI
27M
Master Clock Free Run
DVPLLCK(ADMCLKI)
DVPWM
IC4206
IC4205
TC7WHU04FU
Play Mster clock
CN4702
CN2
IC1
PDY081A
ALTERA
MHLP ASSY
(VWV1991)
DVVCLKO
IC4009
VCLKI
HCLK0
HOST BUS
IC5202
UPD72893AGD-LML
LINK/DV CODEC
UPD72852AGB-8EU
SCLK
IC5101
Phy
CN5102
DV
MCLK
IC1101
CPU SDRAM
K4S281632E-TC75
IC5204
DV SDRAM
K4S161622D

3.1.4 POWER BLOCK DIAGRAM



A

B

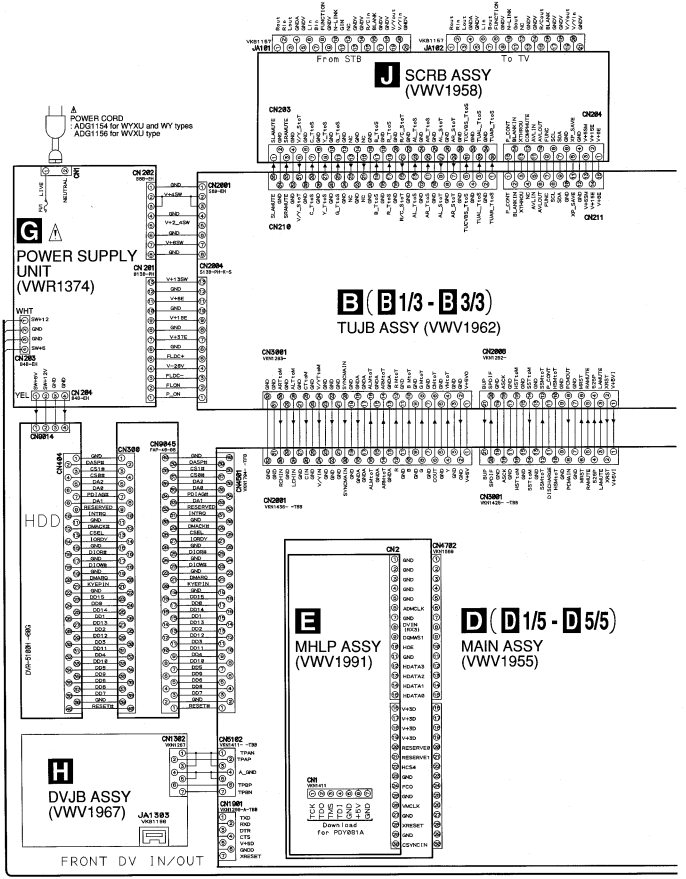
C

D

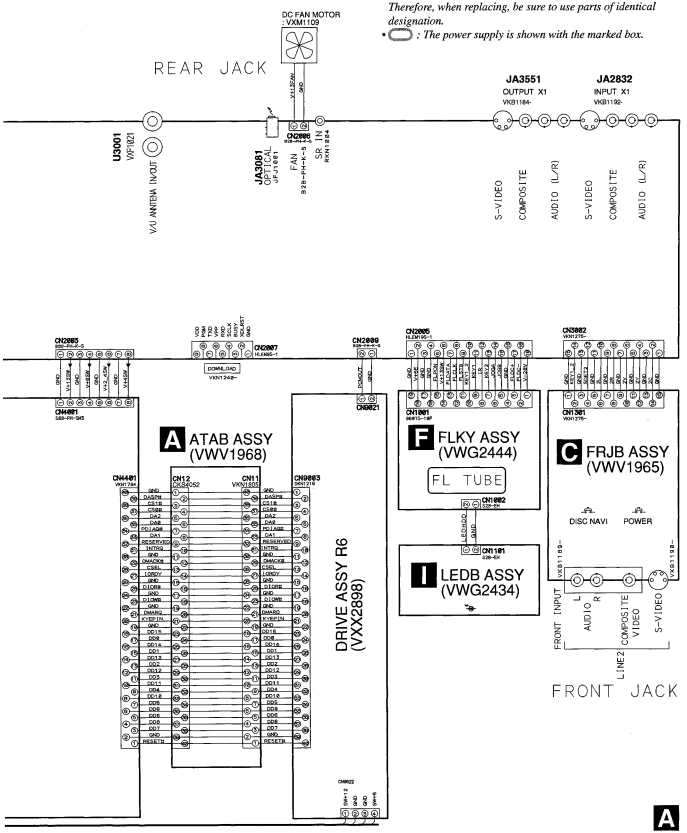
E

F

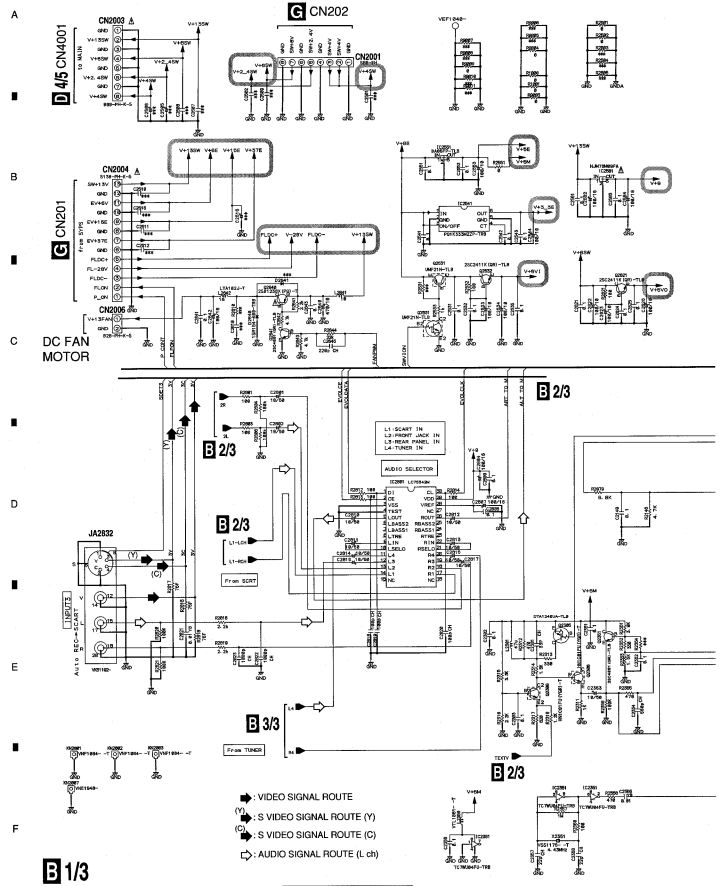
3.2 ATAB ASSY and OVERALL WIRING DIAGRAM



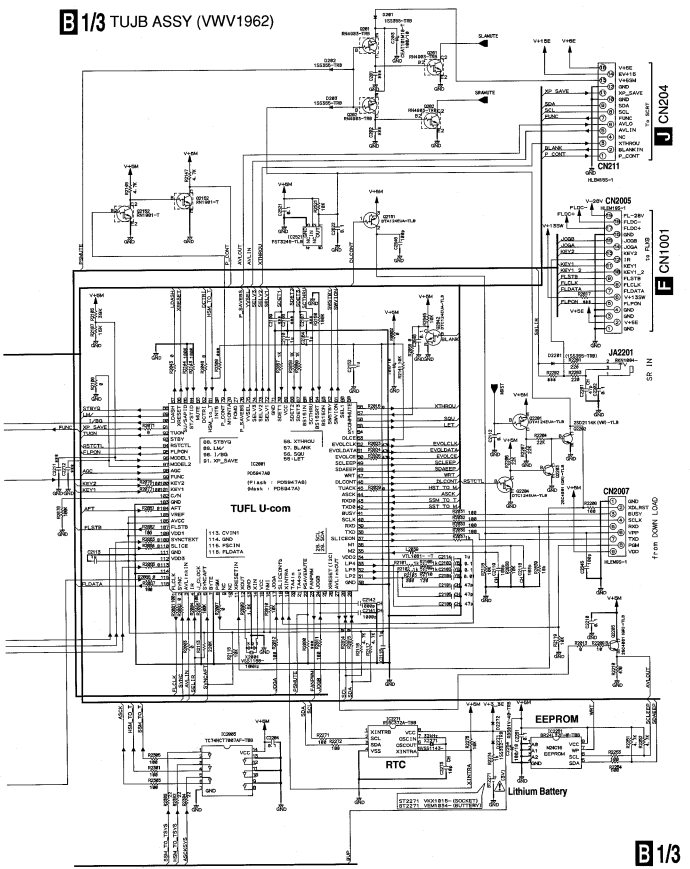
NOTES: • *When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".*
• *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
• ⬭ : *The power supply is shown with the marked box.*



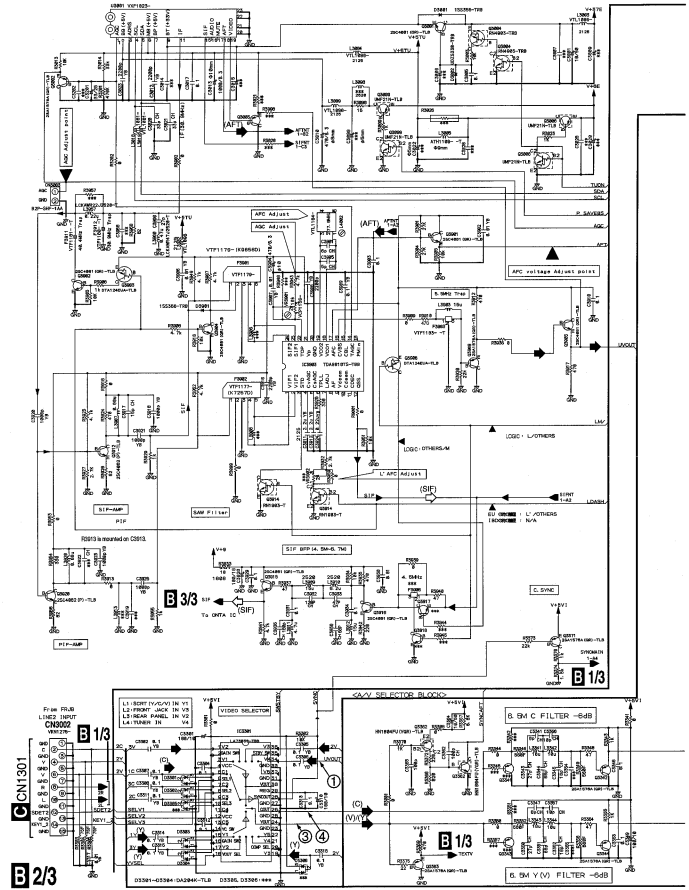
3.3 TUJB(1/3) ASSY

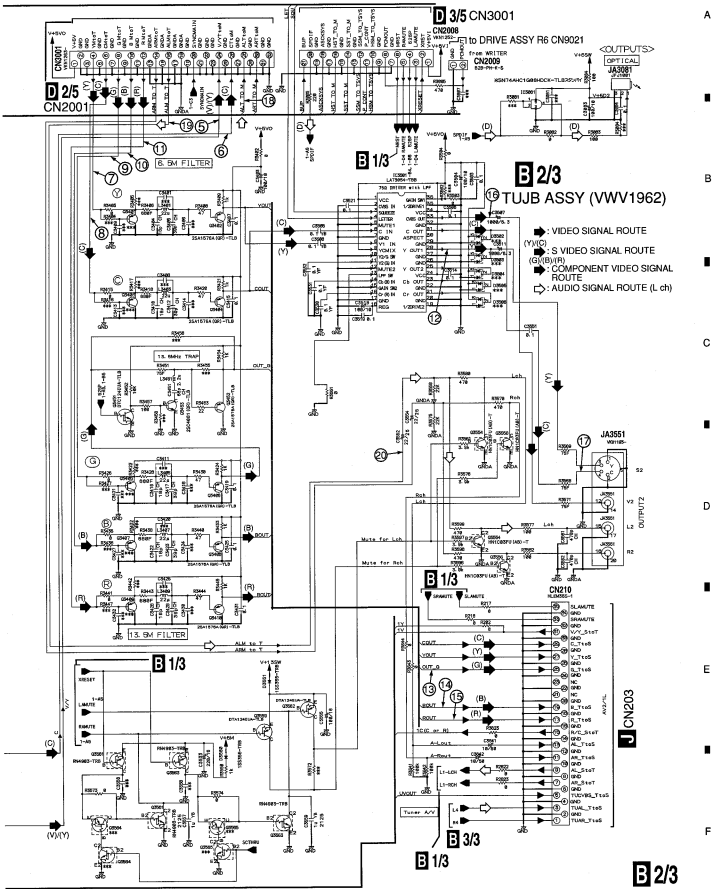


B 1/3 TUJB ASSY (VWV1962)

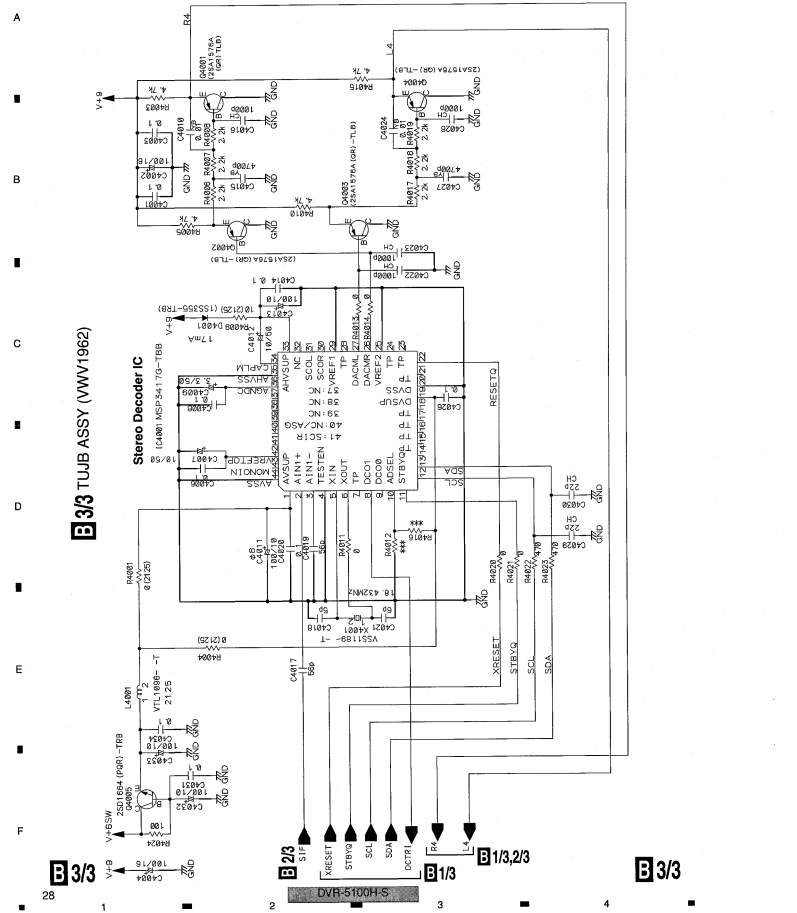


3.4 TUJB ASSY(2/3)

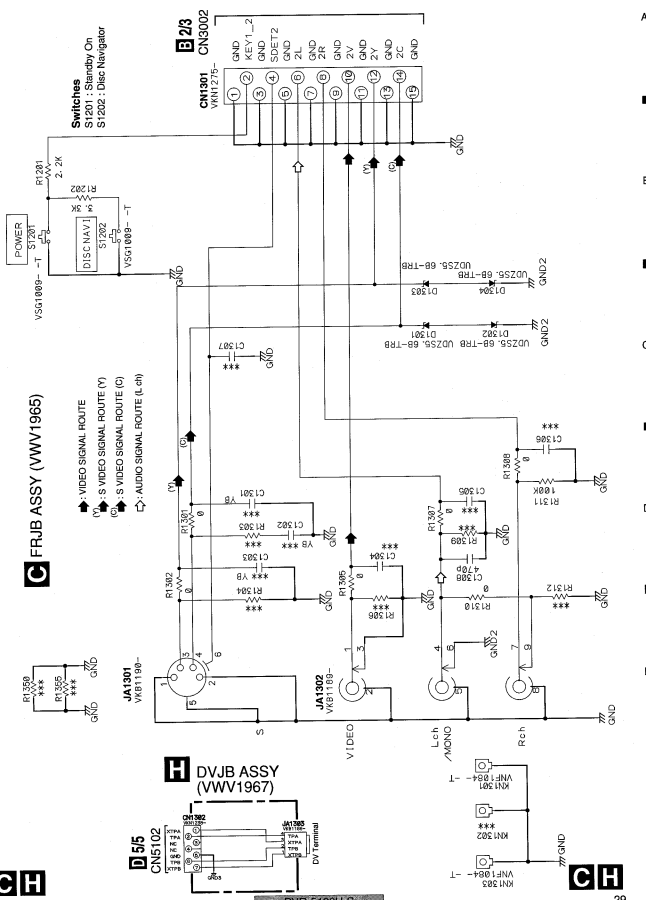



D 3/5 CN3001
to DRIVE ASSY R6 CN9021
<OUTPUTS>
OPTICAL
D 2/5 CN2001
B 1/3
B 2/3
TUJB ASSY (VWV1962)
: VIDEO SIGNAL ROUTE
(Y)(C)
: S VIDEO SIGNAL ROUTE
(G)(B)(R)
: COMPONENT VIDEO SIGNAL ROUTE
: AUDIO SIGNAL ROUTE (L ch)
8. 9M FILTER
13. 9M FILTER
15. 5MHz TRAP
JA3551
CN203
CN210
B 3/3
B 1/3
B 2/3

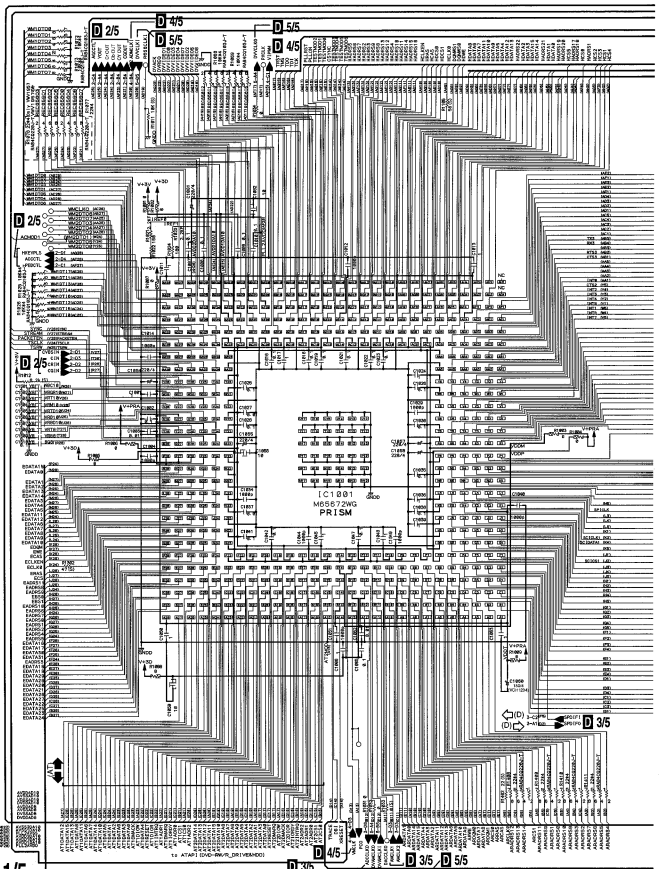
3.5 TUJB ASSY(3/3)

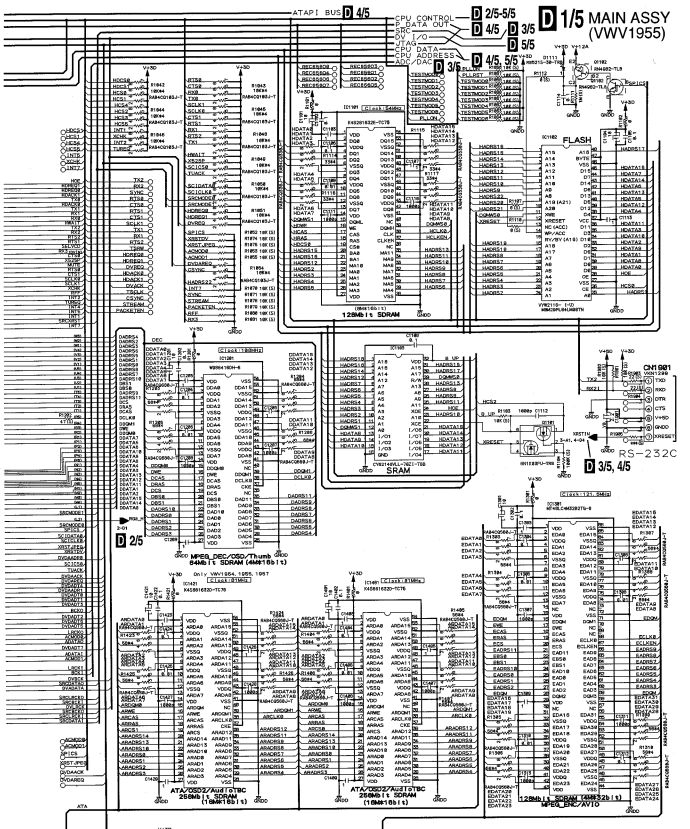


3.6 FRJB and DVJB ASSYS

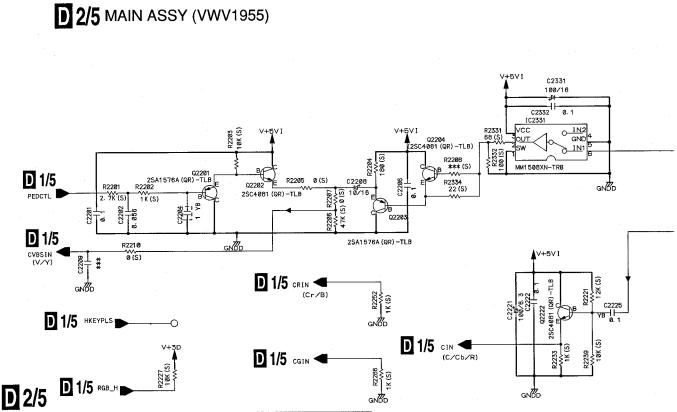


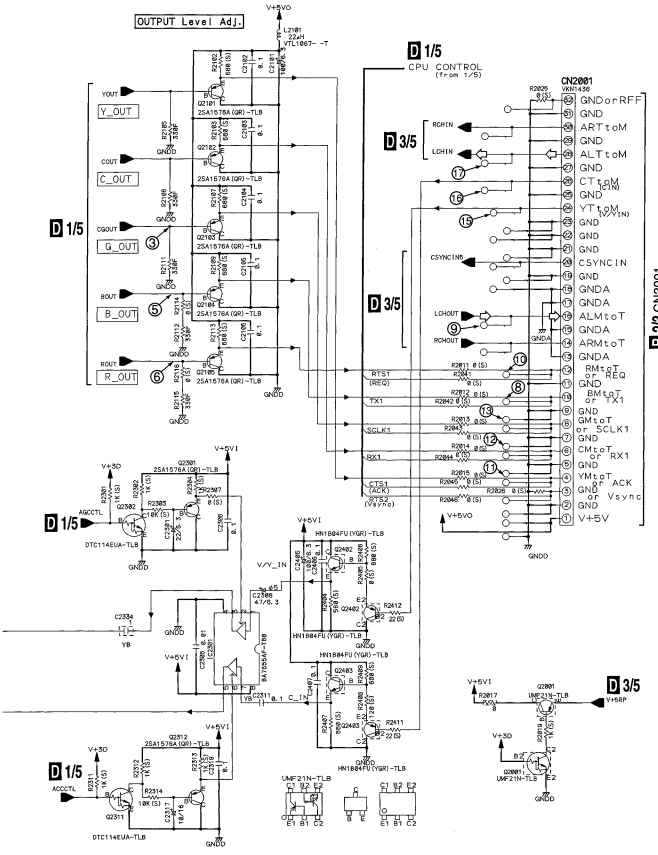
3.7 MAIN ASSY(1/5)




D 1/5 MAIN ASSY (VWV1955)
ATAPI BUS D 4/5
CPU CONTROL D 2/5-5/5
CPU DATA OUT D 4/5 / D 3/5
SRC D 5/5
I/O
JTAG
CPU DATA
CPU ADDRESS D 4/5, 5/5
ADV DATA D 3/5
FLASH
SRAM
SDRAM
RS-232C
D 2/5
D 3/5, 4/5
(AT) : ATA DATA SIGNAL ROUTE
(D) : AUDIO SIGNAL ROUTE (DIGITAL)
D 1/5
DVR-5100H-S
31

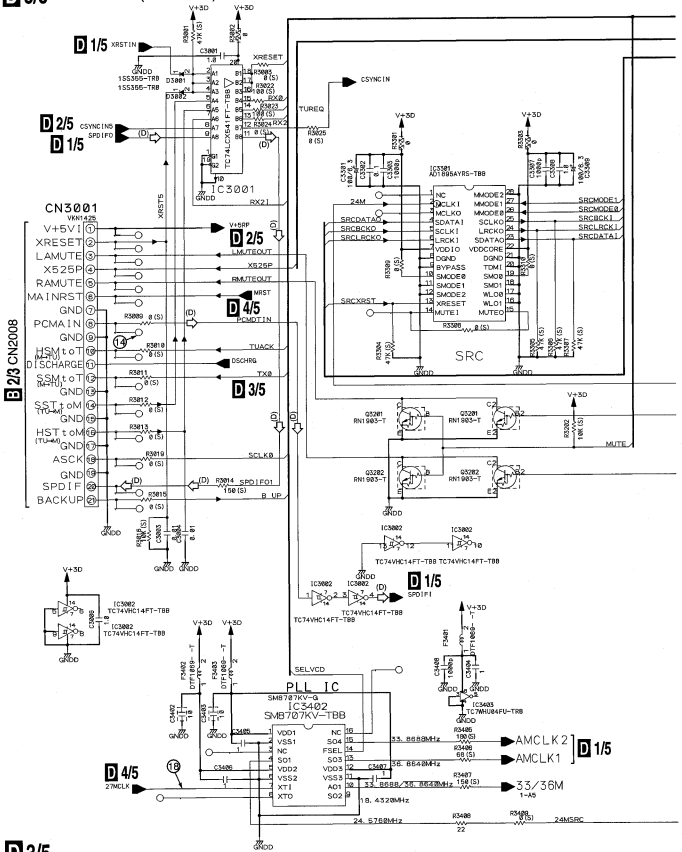
3.8 MAIN ASSY(2/5)

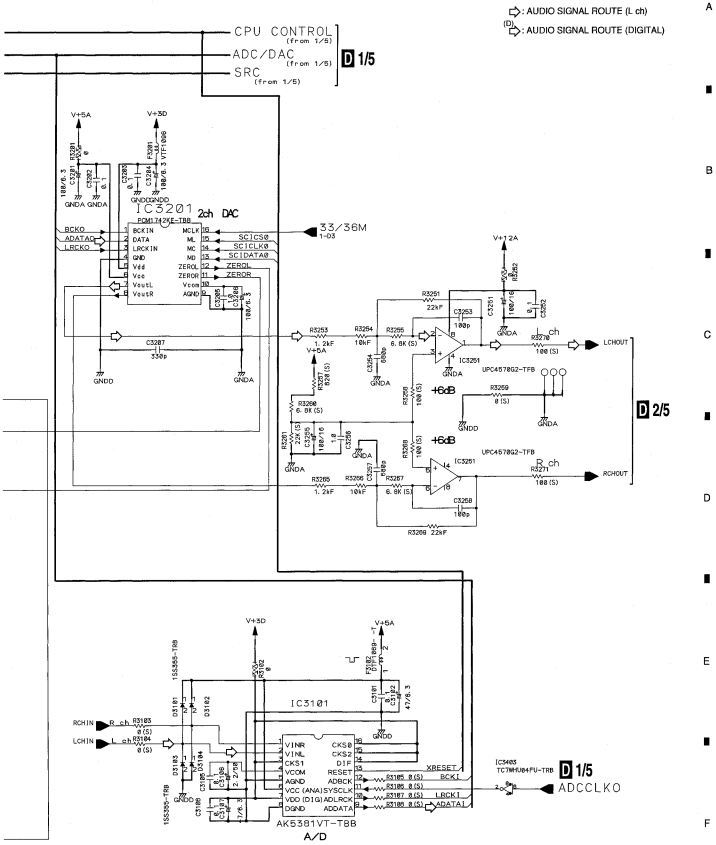



OUTPUT Level Adj.
D 1/5
CPU CONTROL
(from 1/5)
D 3/5
CN2001
VKN1436
B 2/3 CN3001
Y_OUT
C_OUT
G_OUT
B_OUT
R_OUT
YOUT
COUT
CGOUT
BOUT
ROUT
2SA1576A (QR)-TLB
GNDD
V+5VO
V+5VI
V+3D
RGHIN
LCHIN
CSYNCIN
LCHOUT
RCHOUT
RTS1 (REQ)
TX1
SCLK1
RX1
CTS1 (ACK)
TXS2 (Vsync)
GNDorRFF
ARTtoM
ALTtoM
CTtoM
YTtoM
ARMtoT
RMtoT or REQ
BMtoT or TX1
GMtoT or SCLK1
CMtoT or RX1
YMtoT or ACK
V+5V
AGCCTL
ACCCTL
DTC114EUA-TLB
HN1884FU (YGR)-TLB
UMF21N-TLB
BA1404A-T09
V/V_IN
YB
D 2/5
: AUDIO SIGNAL ROUTE (L ch)

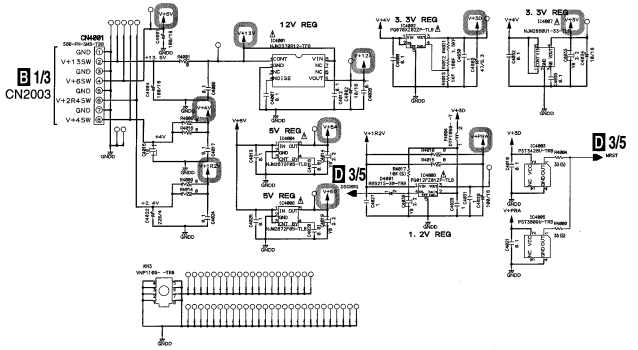
3.9 MAIN ASSY(3/5)

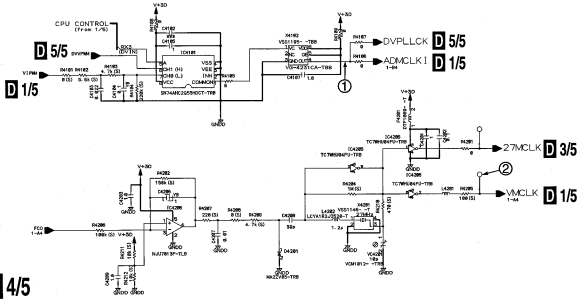
D 3/5 MAIN ASSY (VWV1955)

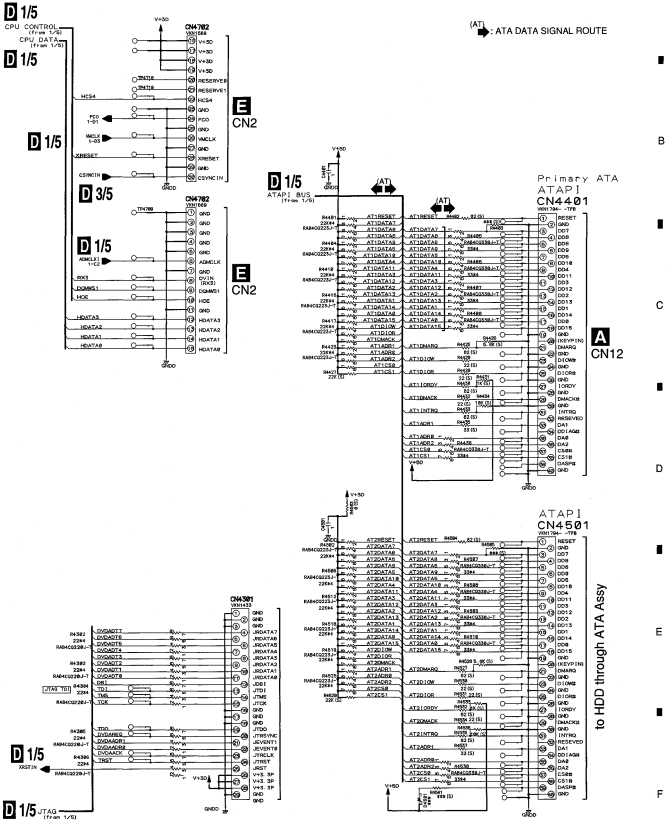



: AUDIO SIGNAL ROUTE (L ch)
(D): AUDIO SIGNAL ROUTE (DIGITAL)
CPU CONTROL (from 1/5)
ADC/DAC (from 1/5)
SRC (from 1/5)
D 1/5
V+5A
V+3D
IC3201 2ch DAC
PCM1742KE-T8B
BCKIN
DATA
LRCKIN
GND
Vdd
Vcc
Voutl
Voutr
MCLK
ML
MC
MD
ZEROL
ZEROR
Vcom
AGND
SCICS0
SCICLK0
SCIDATA0
33/36M
1-03
V+12A
R3253
1.2kF
R3254
10kF
R3255
6.8K (S)
R3251
22kF
C3253
100p
C3251
C3252
R3270
100 (S)
LCHOUT
IC3251
UPC4578G2-TFB
C3254
680p
C3255
820 (S)
+6dB
R3259
0 (S)
R3258
100 (S)
R3256
6.8K (S)
D 2/5
R3261
22kF
C3256
C3257
680p
R3271
100 (S)
RCHOUT
R3265
1.2kF
R3266
10kF
R3267
6.8K (S)
C3258
100p
R3268 22kF
IC3101
AK5381VT-TBB
A/D
VINR
VINL
CKS1
VCOM
AGND
VCC (ANA)
VDD (DIG)
DGND
CKS3
CKS2
DIF
RESET
ADBCK
SYSCLK
ADLRCK
ADDATA
XRESET
BCKI
LRCKI
ADATAI
R3185 0 (S)
R3186 0 (S)
R3187 0 (S)
R3188 0 (S)
IC3400
TC7WHU04FU-TRB
ADCCLKO
RCHIN
LCHIN
R3103
0 (S)
R3104
0 (S)
D 3/5

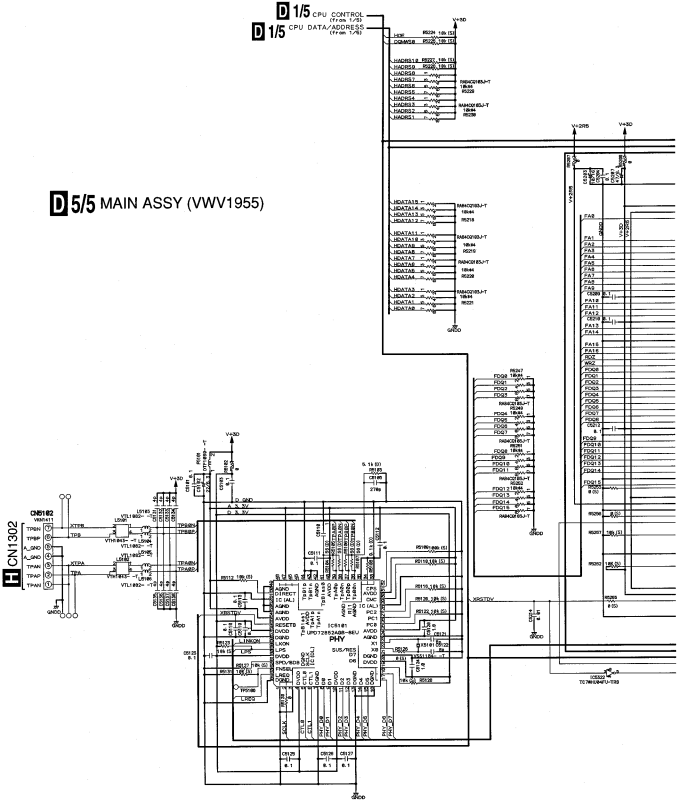
3.10 MAIN ASSY(4/5)

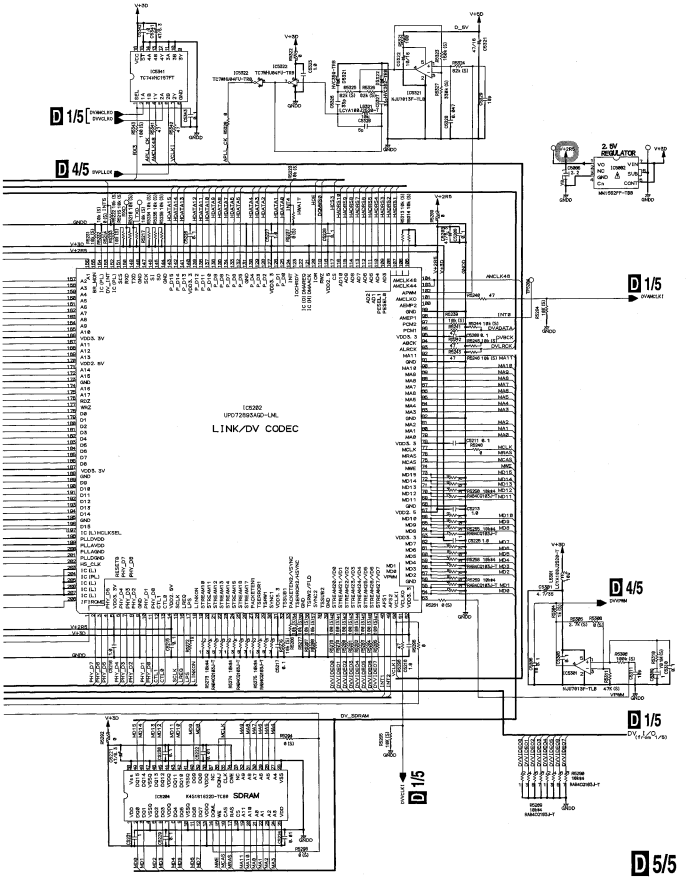





(AT) : ATA DATA SIGNAL ROUTE
D 1/5 CPU CONTROL (From 1/5)
D 1/5 CPU DATA (From 1/5)
D 1/5
D 1/5
D 3/5
D 1/5
D 1/5
D 1/5 JTAG (From 1/5)
E CN2
E CN2
A CN12
D 4/5
CN4782
CN4783
CN4301
CN4501
Primary ATA
ATAPI
ATAPI BUS (From 1/5)
to HDD through ATA Assy

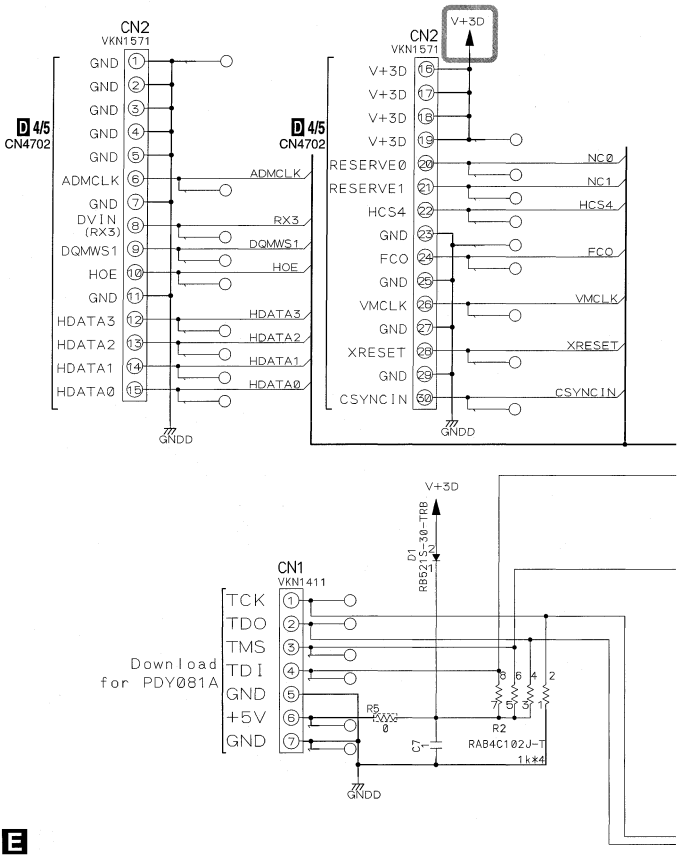
3.11 MAIN ASSY(5/5)

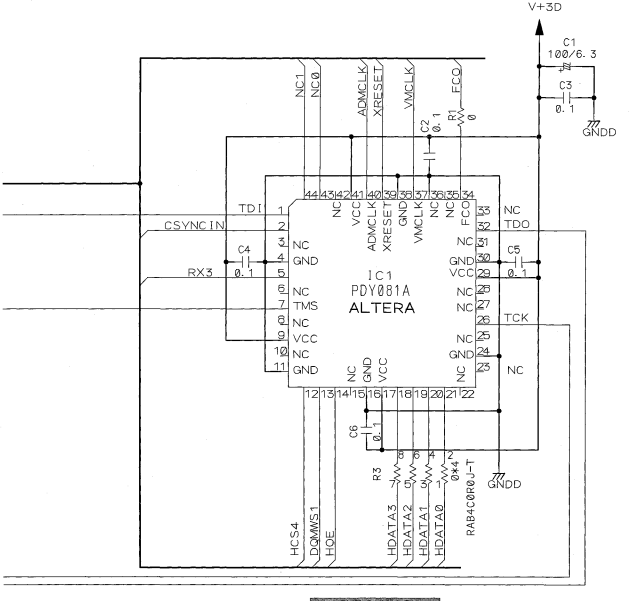



IC202
UPD720924A2-LML
LINK/DV CODEC
SDRAM
D 1/5
D 4/5
D 5/5
2.9V REGULATOR

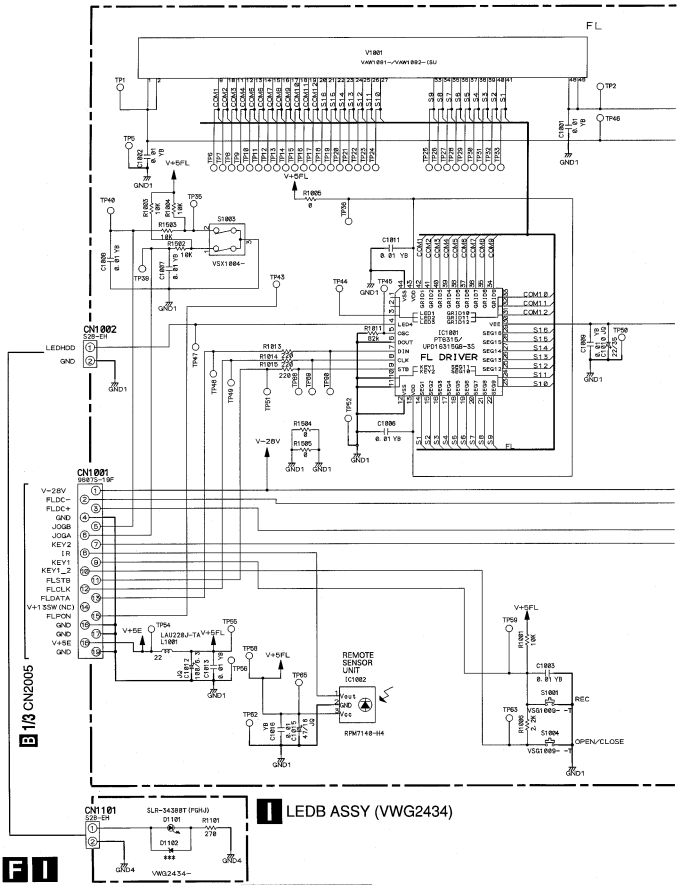
3.12 MHLP ASSY

E MHLP ASSY (VWV1991)

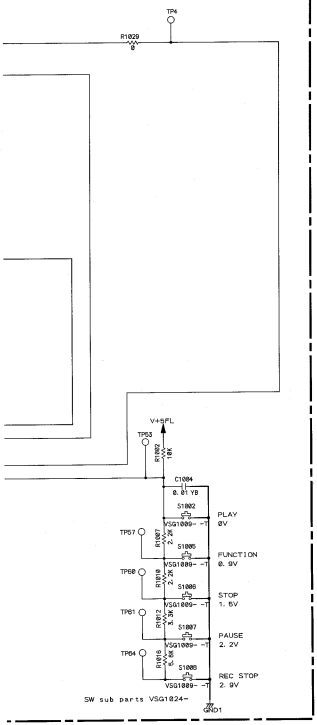



V+3D
C1
100/6.3
C3
0.1
GNDD
NC1
NC0
ADMCLK
XRESET
VMCLK
FCO
C2
0.1
R1
0
IC1
PDY081A
ALTERA
TDI
CSYNCIN
RX3
C4
0.1
NC
GND
TMS
VCC
TDO
C5
0.1
TCK
C6
0.1
R3
0*4
RAB4C0R0J-T
HCS4
DQMWS1
HOE
HDATA3
HDATA2
HDATA1
HDATA0

3.13 FLKY and LEDB ASSYS

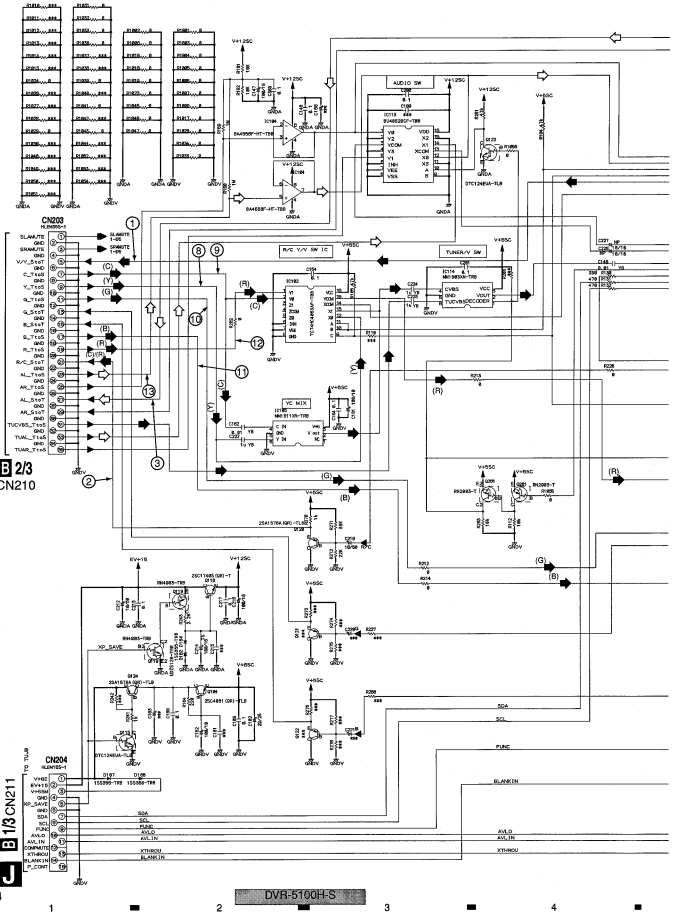


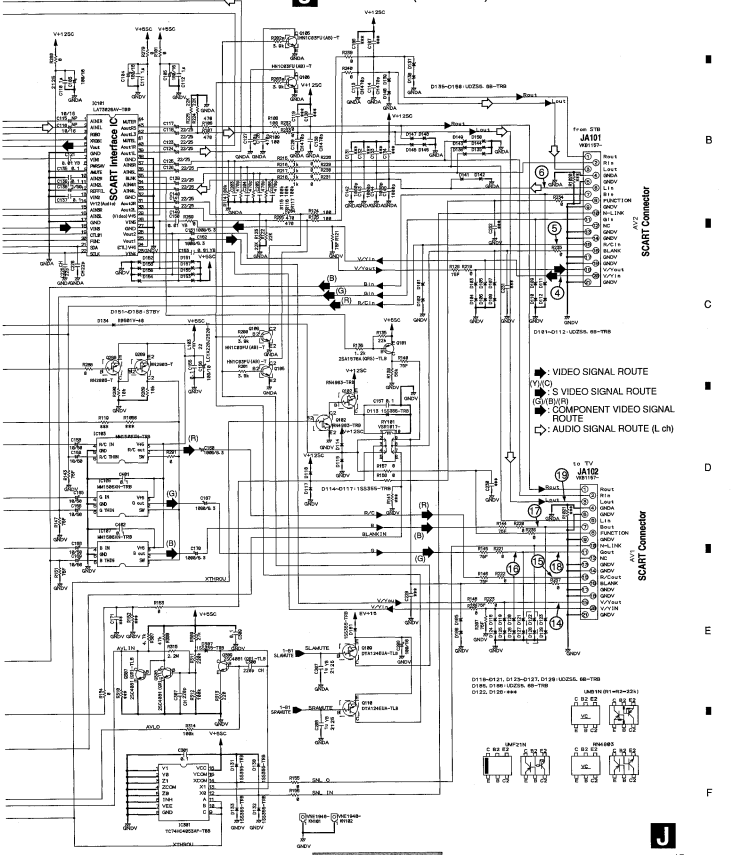
F FLKY ASSY (VWG2444)



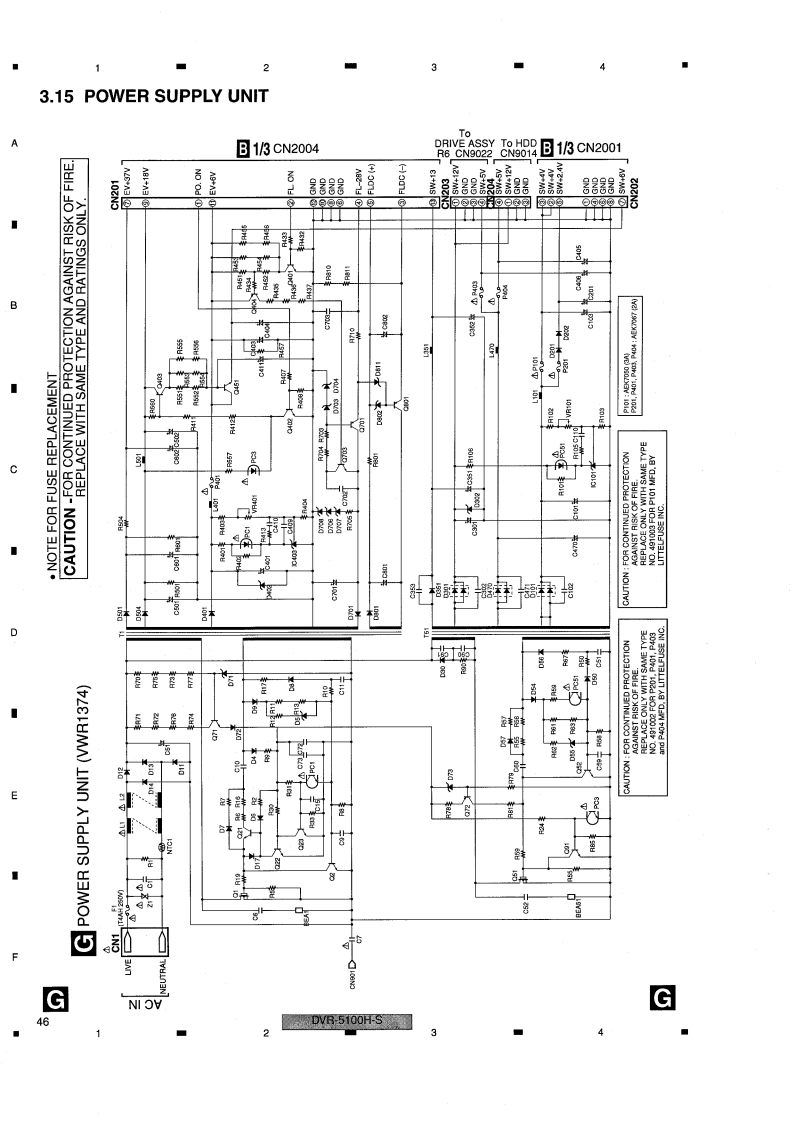
Switches
S1001 : REC
S1002 : PLAY
S1003 : SMART JOG
S1004 : OPEN/CLOSE
S1005 : FUNCTION
S1006 : STOP
S1007 : PAUSE
S1008 : REC STOP

3.14 SCRB ASSY




J SCRB ASSY (VWV1958)
SCART Interface IC
SCART Connector
JA101
JA102
from STB
to TV
: VIDEO SIGNAL ROUTE
(Y)(C) : S VIDEO SIGNAL ROUTE
(G)(B)(R) : COMPONENT VIDEO SIGNAL ROUTE
: AUDIO SIGNAL ROUTE (L ch)

3.15 POWER SUPPLY UNIT



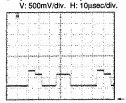
3.16 WAVE FORMS

Note : The encircled numbers denote measuring point in the schematic diagram.

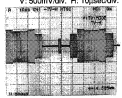
B TUJB ASSY

Measurement condition :
No.1 to No.6 : 75% Color-bar
No.7 to No.17 : 75% Color-bar, AXP disc 1-24
No.18 : 1kHz, 2Vrms
No.19, No.20 : 1kHz, 2Vrms, AXP disc 1-1

(11) CN3001-pin 12 (R) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.

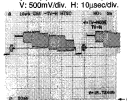


(17) Rear Jack Cout (C) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.

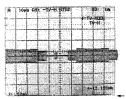


(Not terminated)

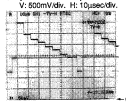
(1) UVIN jumper as same as C3306 (UVIN) (Function : 1 ch)
V: 500mV/div. H: 10μsec/div.

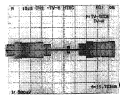


(6) CN3001-pin 26 (C) (Function : L1)
V: 500mV/div. H: 10μsec/div.



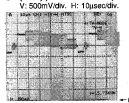
(12) Foot of C3511 + side (Y) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.



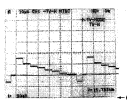


(75Ω terminated)

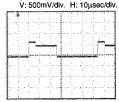
(2) BSIN jumper as same as C3309 (BSIN) (Function : BS9 ch)
V: 500mV/div. H: 10μsec/div.



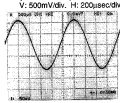
(7) CN3001-pin 4 (Y) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.



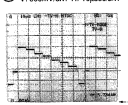
(13) CN210-pin25 (G) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.



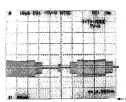
(18) CN3001-pin 28 (Audio Lch) (Function : L1)
V: 500mV/div. H: 20μsec/div.



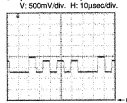
(3) IC3301-pin 24 (Y) (Function : L1)
V: 500mV/div. H: 10μsec/div.



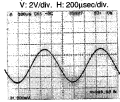
(8) CN3001-pin 6 (C) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.



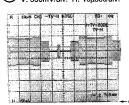
(14) CN210-pin19 (B) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.



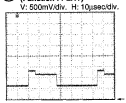
(19) CN3001-pin 16 (Audio Lch) (Function : PLAY)
V: 2V/div. H: 200μsec/div.



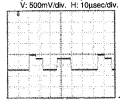
(4) IC3301-pin 26 (C) (Function : L1)
V: 500mV/div. H: 10μsec/div.



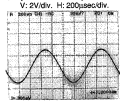
(9) CN3001-pin 8 (G) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.



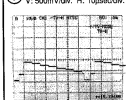
(15) CN210-pin17 (R) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.



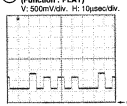
(20) Foot of C3552 + side (Audio Lch) (Function : PLAY)
V: 2V/div. H: 200μsec/div.



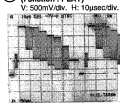
(5) CN3001-pin 24 (Y) (Function : L1)
V: 500mV/div. H: 10μsec/div.



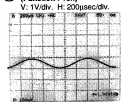
(10) CN3001-pin 10 (B) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.



(16) Foot of C3507 + side (CVBS) (Function : PLAY)
V: 500mV/div. H: 10μsec/div.

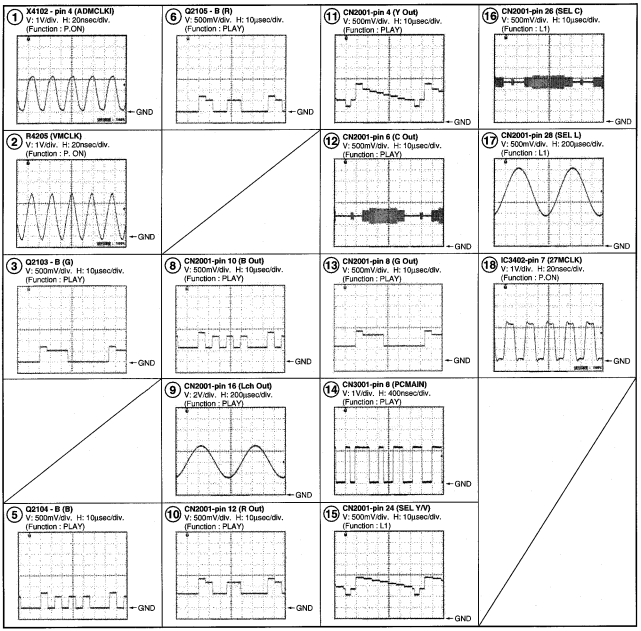


(21) L4 line (Audio Lch) (Function : tch)
V: 1V/div. H: 200μsec/div.



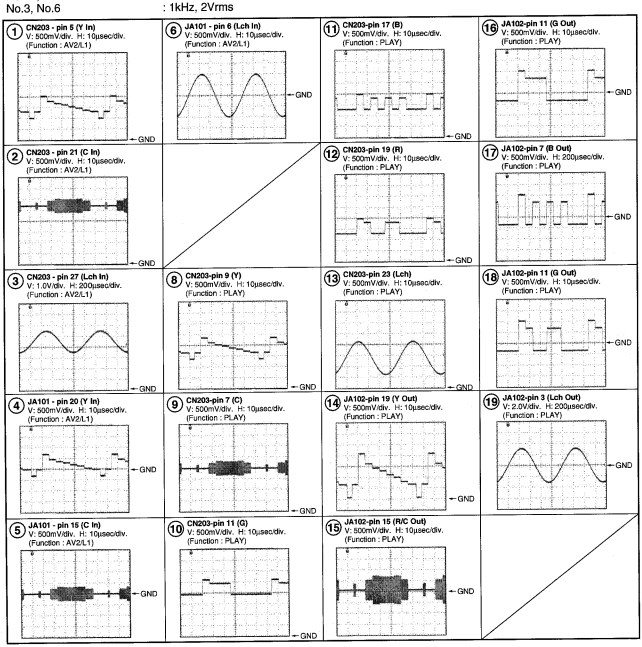
D MAIN ASSY

Measurement condition ;
No.3 to No.8, No.10 to No.13 : 75% Color-bar, AXP disc 1-24
No.15 ,No.16 : 75% Color-bar
No.9, No.14 : 1kHz, 2Vrms, AXP disc 1-1
No.17 : 1kHz, 2Vrms



J SCRB ASSY

Measurement condition ;
No.8 to No.12, No.14 to No.18 : 75% Color-bar, AXP disc 1-24
No.1, No.2, No.4, No.5 : 75% Color-bar
No.13, No.19 : 1kHz, 2Vrms, AXP disc 1-1
No.3, No.6 : 1kHz, 2Vrms



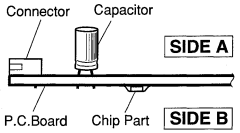
4. PCB CONNECTION DIAGRAM
4.1 ATAB ASSY

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

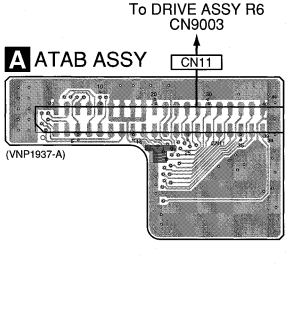
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E	Transistor
B C E	B C E	Transistor with resistor
D G S	D G S	Field effect transistor
		Resistor array
		3-terminal regulator

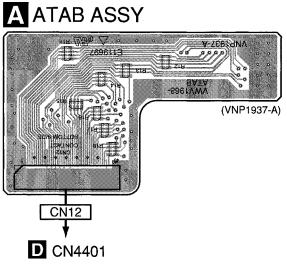
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



SIDE A

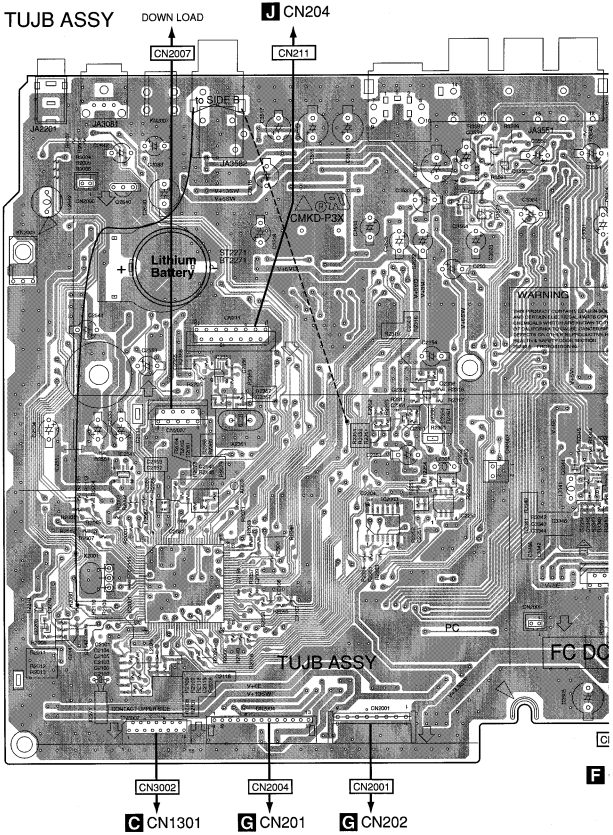
SIDE B



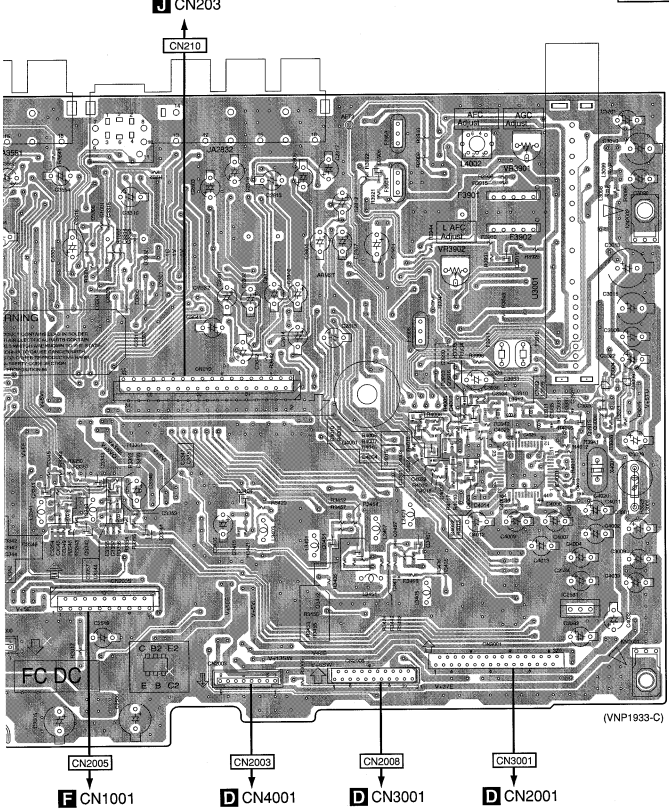


4.2 TUJB ASSY

SIDE A

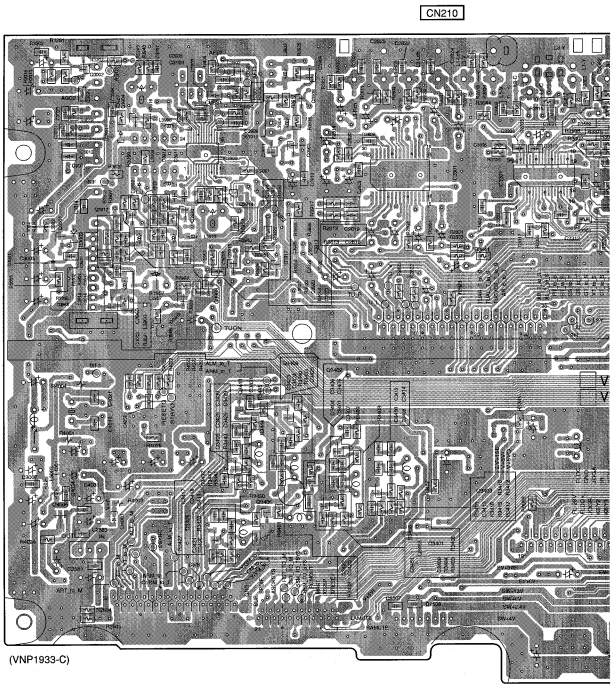


SIDE A

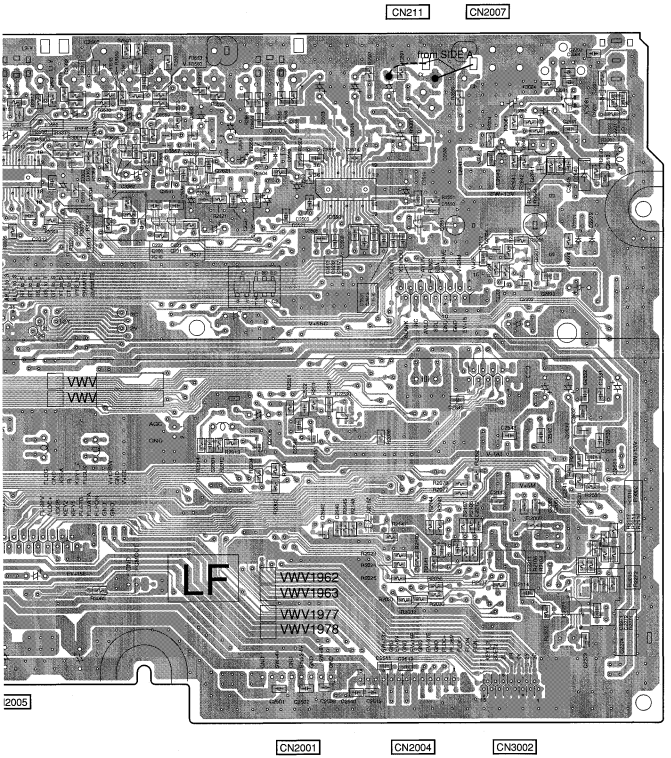

J CN203
CN210
(VNP1933-C)
CN2005
CN2003
CN2008
CN3001
F CN1001
D CN4001
D CN3001
D CN2001

SIDE B

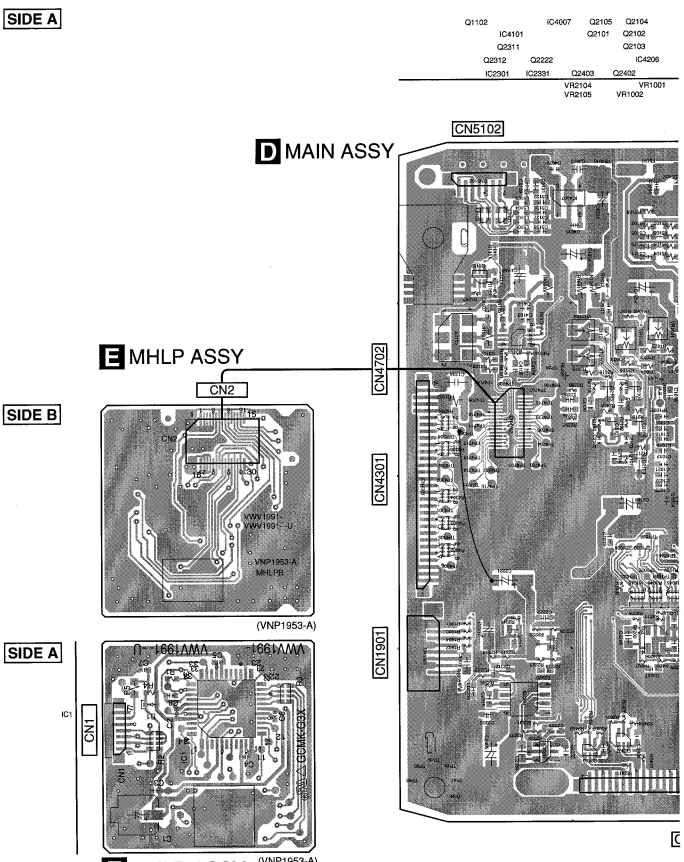
B TUJB ASSY



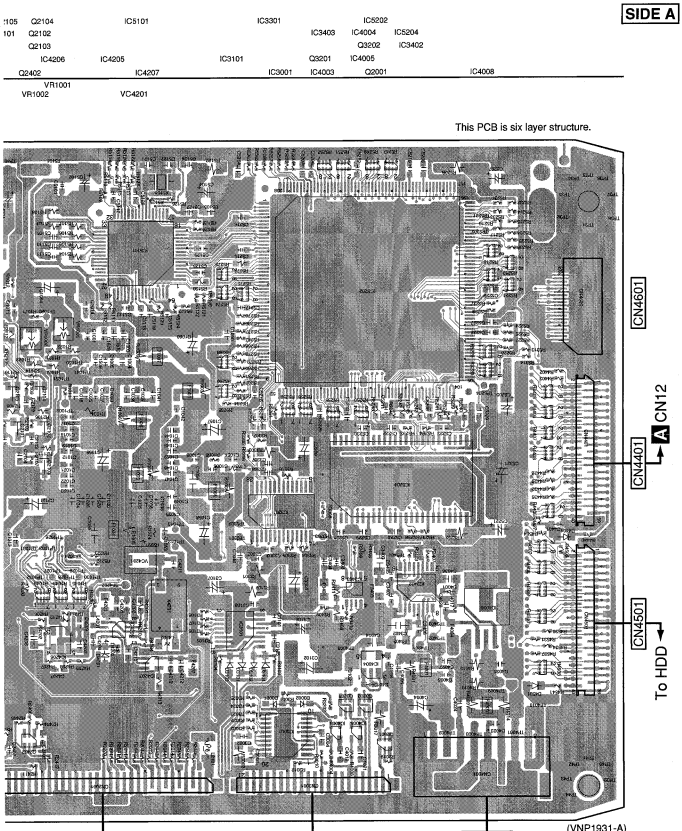
SIDE B


CN211
CN2007
from SIDE A
VWV
VWV
LF
VWV1962
VWV1963
VWV1977
VWV1978
2005
CN2001
CN2004
CN3002

4.3 MAIN and MHLP ASSYS



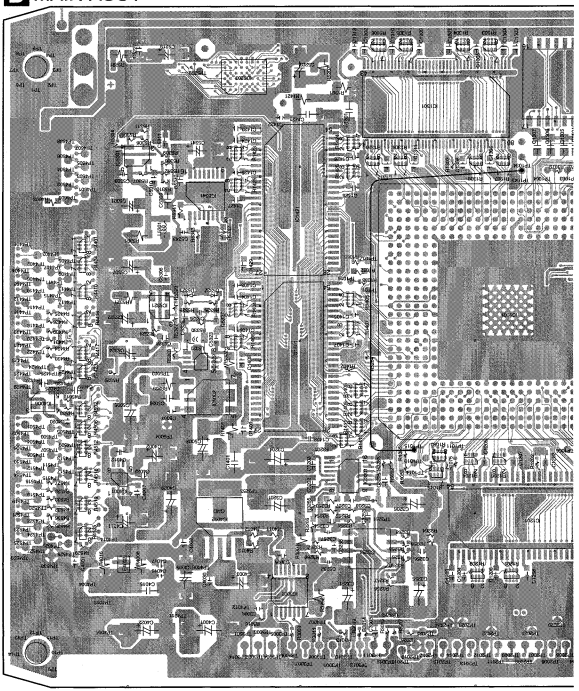
SIDE A


'105 Q2104 IC5101 IC3301 IC5202
101 Q2102 IC3403 IC4004 IC5204
Q2103 Q3202 IC3402
IC4206 IC4205 IC3101 Q3201 IC4005
Q2402 IC4207 IC3001 IC4003 Q2001 IC4008
VR1001
VR1002 VC4201
This PCB is six layer structure.
CN4601
A CN12
CN4401
CN4501
To HDD
(VNP1931-A)
CN2001
B CN3001
CN3001
B CN2008
CN4001
B CN2003

SIDE B

IC5203 IC1301
IC5301 IC5341 IC1421
IC5321 IC5002 IC1401 IC3201 IC1001
IC4006 IC4001 IC4002 IC3002 IC3251 IC1201

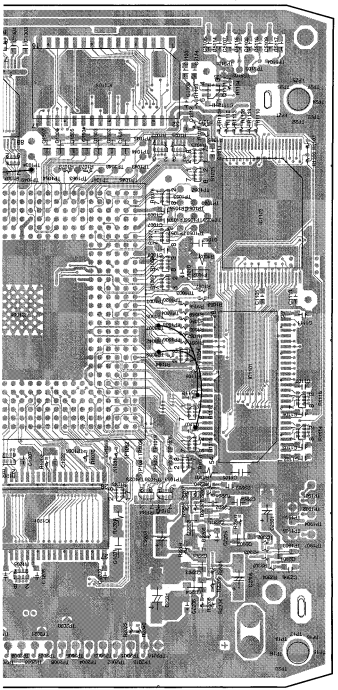
D MAIN ASSY



SIDE B

IC1103 Q1101 IC1102
Q2202 Q2201 IC1101
IC1001 Q2203
IC1201 Q2204 Q2302 Q2301

This PCB is six layer structure.

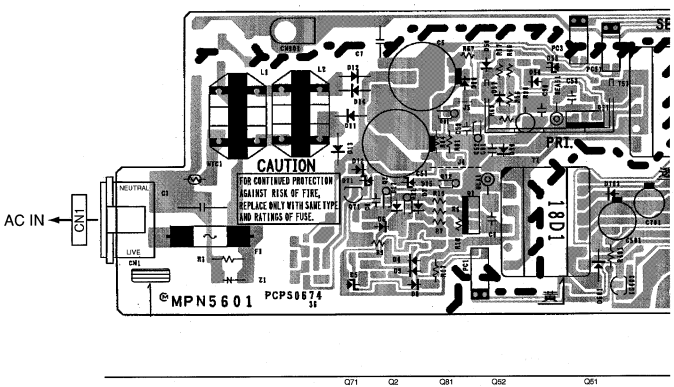


(VNP1931-A)

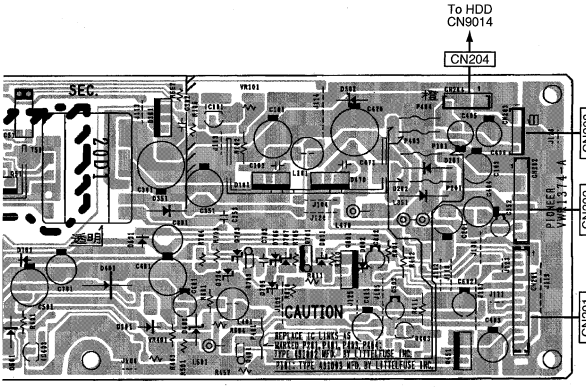
4.4 POWER SUPPLY UNIT

SIDE A

G POWER SUPPLY UNIT



SIDE A



51 VR401 IC403 VR101 IC101 Q703 Q701 Q801 Q403

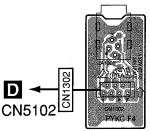
4.5 FRJB and DVJB ASSYS

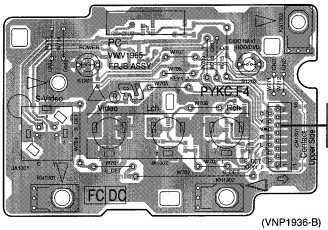
SIDE A

SIDE A

C FRJB ASSY

H DVJB ASSY

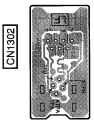




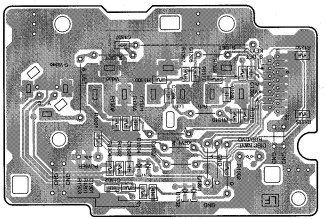
SIDE B

SIDE B

H DVJB ASSY



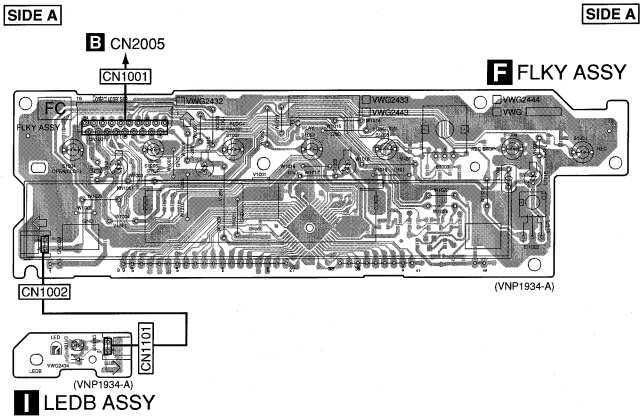
C FRJB ASSY

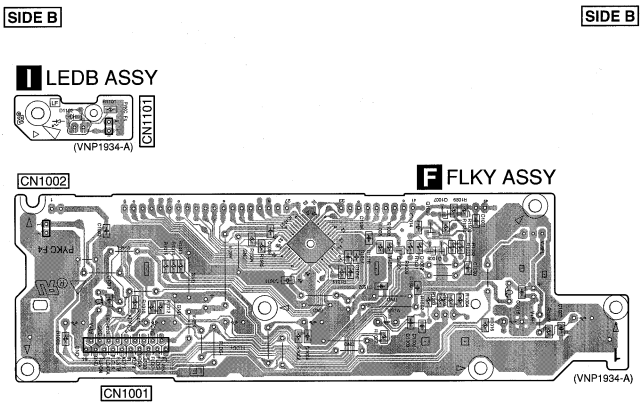


C H

C H

4.6 FLKY and LEDB ASSYS





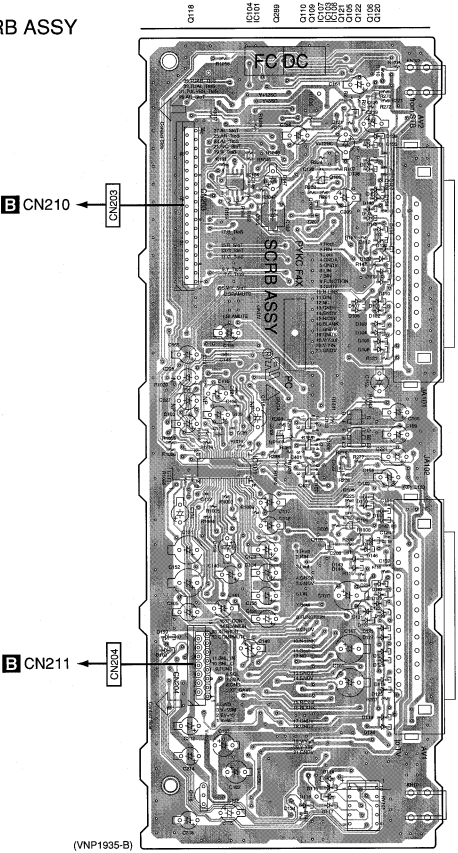
IC1001 Q1009 Q1007 Q1001 Q1002 Q1008

4.7 SCRB ASSY

SIDE A

SIDE A

J SCRB ASSY



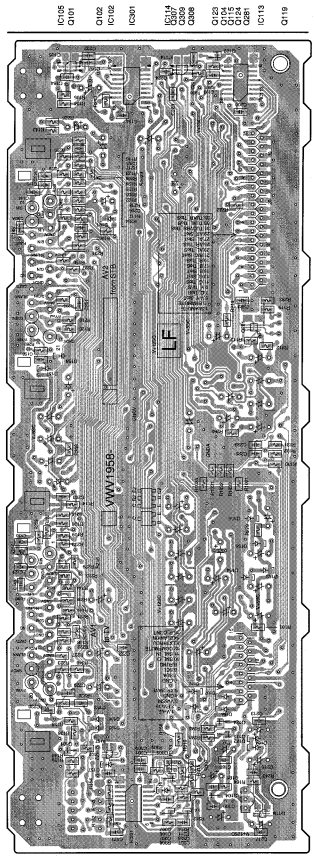
J

J

SIDE B

SIDE B

J SCRB ASSY



(VNP1935-B)

DVR-5100H-S

5. PCB PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω	→	*56 x 10¹ → 561*	*RD1/4PU[5][6][1]J*
47k Ω	→	*47 x 10³ → 473*	*RD1/4PU[4][7][3]J*
0.5 Ω	→	*R50*	*RN2H[R][5][0]K*
1 Ω	→	*1R0*	*RS1P[1][R][0]K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 x 10¹ → 5621 ..... RN1/4PC[5][6][2][1]F

Mark No.	Description	Part No.
	LIST OF ASSEMBLIES	
	1..ATAB ASSY	VWV1968
	1..TUJB ASSY	VWV1962
NSP	1..FJDB ASSY	VWM2206
	2..FRJB ASSY	VWV1965
	2..DVJB ASSY	VWV1967
	1..MAIN ASSY	VWV1955
	2..MHLP ASSY	VWV1991
	1..FLKB ASSY	VWM2213
	2..FLKY ASSY	VWG2444
	2..LEDB ASSY	VWG2434
⚠	1..POWER SUPPLY UNIT	VWR1374
	1..SCRB ASSY	VWV1958

Mark No.	Description	Part No.
	A ATAB ASSY [VWV1968]	
	OTHERS	
CN12	CONNECTOR	CKS4052
CN11	40P ATA CONECTOR	VKN1805
	B TUJB ASSY [VWV1962]	
	SEMICONDUCTORS	
IC2551		BA05FP
IC2251		BR24L32F-W
IC3301		LA73030
IC3501		LA73054
IC2801		LC75342M
IC4001		MSP3417G
IC2581		NJM78M09FA
IC2001		PD5947A8
IC2541		PQ1K333M2ZP
IC2521		PST3245
IC2271		RS5C372A
IC2003		TC74HCT7007AF
IC2351		TC7WU04FU
IC3903		TDA9818TS
Q3002, Q3342, Q3344, Q3363, Q3371		2SA1576A

Mark No.	Description	Part No.
Q3402, Q3404, Q3406, Q3408, Q3410		2SA1576A
Q3452, Q3909, Q4001-Q4004		2SA1576A
Q2640		2SB1238X
Q2532, Q2621		2SC2411K
Q2203, Q2205, Q2351, Q2641, Q3001		2SC4081
Q3453, Q3901, Q3902, Q3904, Q3905		2SC4081
Q3915, Q3916		2SC4081
Q3912, Q3920		2SC4082
Q4005		2SD1664
Q2202		2SD2114K
Q2151, Q2201, Q2305, Q3559, Q3562		DTA124EUA
Q3903, Q3906		DTA124EUA
Q2204, Q2642, Q3451		DTC124EUA
Q3362		HN1B04FU
Q2306		HN1C01FU
Q3554, Q3556		HN1C03FU
Q2152		RN1901
Q3914		RN1903
Q201, Q202, Q3004, Q3561, Q3563		RN4903
Q2531, Q3006, Q3099		UMF21N
D2640		1SR154-400
D2271		1SS352
D201-D203, D2201, D3001, D3551		1SS355
D3560, D4001		1SS355
D3901		1SS356
D3301-D3304		DA204K
D2272		RB501V-40
D3002		UDZS33B
	COILS AND FILTERS	
L3005	RADIAL INDUCTOR (1000uH)	ATH1109
L3341, L3343		LAU180J
L3401, L3403, L3405, L3407, L3409		LAU220J
L3451		LAU2R2J
L2301		LAU470J
L3957		LCKAWR22J2520
L3960		LCKAWR47J2520
L2641, L3342, L3344		LCYA100J2520
L3903, L3909, L3912		LCYA150J2520
L3911		LCYA4R7J2520
L3910		LCYA8R2J2520
L3907, L3920		LCYAR68J2520
L2642	INDUCTOR	LTA102J
F3902	SAW FILTER	VTF1177
F3901	SAW FILTER	VTF1179
F3912	IF TRAP FILTER	VTF1180

Mark No.	Description	Part No.
F3911	IF TRAP FILTER	VTF1181
F3903	TRAP FILTER	VTF1183
L2039, L2359, L3018, L3019	CHIP BEADS	VTL1081
L3003, L3004, L3099, L3902	CHIP BEADS	VTL1096
L4002	VCO COIL (77.8mH)	VTL1164

CAPACITORS

C3356, C3357	CCSRCH100D50
C2118, C2119, C2545, C2546	CCSRCH101J50
C2818-C2820, C3362, C3365	CCSRCH101J50
C2141, C2142, C2822, C2823, C4016	CCSRCH102J50
C4022, C4023, C4028	CCSRCH102J50
C3932	CCSRCH121J50
C3917	CCSRCH150J50
C3345, C3352, C3404, C3410, C3416	CCSRCH180J50
C3422, C3428	CCSRCH180J50
C3935	CCSRCH181J50
C2357, C2358, C4029, C4030	CCSRCH220J50
C2645	CCSRCH221J50
C3343, C3350, C3960	CCSRCH270J50
C2301, C3020, C3021	CCSRCH330J50
C3405, C3412, C3417, C3423, C3429	CCSRCH390J50
C2101, C2105, C2106, C2201, C3933	CCSRCH470J50
C3561, C3562	CCSRCH471J50
C2273	CCSRCH4R0C50
C4017, C4019	CCSRCH560J50
C2354	CCSRCH561J50
C3905, C4018	CCSRCH5R0C50
C3344, C3351, C3451, C3936	CCSRCH680J50
C3901, C4021	CCSRCH6R0D50
C3341, C3347	CCSRCH8R0D50
C2353, C2801, C2802, C2810-C2817	CEAT100M50
C3001, C3364, C3641, C3642, C4007	CEAT100M50
C4012	CEAT100M50
C203, C2111, C2254, C2533, C2534	CEAT101M10
C2544, C2553, C2622, C2623, C2626	CEAT101M10
C3083, C3301, C3310, C3349, C3403	CEAT101M10
C3504, C3518, C4011, C4013	CEAT101M10
C4032, C4033	CEAT101M10
C2582, C2584, C2642, C2804, C2807	CEAT101M16
C3555, C3928, C4002, C4004	CEAT101M16
C3013, C3507, C3511	CEAT102M6R3
C3552, C3554	CEAT220M25
C3533	CEAT221M16
C3201	CEAT330M25
C4009	CEAT3R3M50
C2640	CEAT471M16
C3010, C3904	CEAT471M6R3
C3911, C3912	CKSQYB225K10
C3918, C3920, C3921, C3923, C3925	CKSRYB102K50
C2104, C2355, C2821, C3317, C3902	CKSRYB103K50
C3906, C3907, C3930, C4010, C4024	CKSRYB103K50
C2102, C2103, C3302, C3305-C3308	CKSRYB104K16
C3311, C3314-C3316, C3505, C3508	CKSRYB104K16
C3909	CKSRYB104K16
C3012, C3023, C3908, C3916	CKSRYB222K50
C3924	CKSRYB224K10
C4015, C4027	CKSRYB472K50

Mark No.	Description	Part No.
C2112, C2140, C2202, C2204, C2210		CKSRYF104Z25
C2251, C2302, C2303, C2351, C2352		CKSRYF104Z25
C2356, C2521, C2522, C2531, C2532		CKSRYF104Z25
C2535, C2541-C2543, C2551, C2552		CKSRYF104Z25
C2581, C2583, C2621, C2624, C2625		CKSRYF104Z25
C2641, C2643, C2646, C2808, C2809		CKSRYF104Z25
C3017, C3084, C3304, C3312, C3313		CKSRYF104Z25
C3346, C3353, C3407, C3415, C3419		CKSRYF104Z25
C3425, C3431, C3503, C3506, C3514		CKSRYF104Z25
C3519, C3521, C3530-C3532, C3551		CKSRYF104Z25
C3903, C3910, C3929, C3931, C3934		CKSRYF104Z25
C4001, C4003, C4006, C4008, C4014		CKSRYF104Z25
C4020, C4026, C4031, C4034		CKSRYF104Z25
C3005		CKSRYF104Z50
C2110, C2113-C2115, C2152, C2154		CKSRYF105Z10

RESISTORS

R4001, R4004	RS1/10S0R0J
R4009	RS1/10S100J
R3098	RS1/10S150J
R3346, R3349, R3352, R3356	RS1/16S5600F
R3406, R3418, R3428, R3438, R3443	RS1/16S6800F
R2815, R2817, R2818, R3303-R3305	RS1/16S75R0F
R3451, R3568, R3569, R3571	RS1/16S75R0F
VR3901 (10K)	VCP1156
Other Resistors	RS1/16S###J

OTHERS

CN2006, CN2009 CONNECTOR POST	B2B-PH-K
CN3003 2P TOP POST	B2P-SHF-1AA
CN2003 CONNECTOR	B8B-PH-K
CN211 CONNECTOR	HLEM15S-1
CN2005 CONNECTOR	HLEM19S-1
CN210 CONNECTOR	HLEM35S-1
CN2007 CONNECTOR	HLEM9S-1
JA3081 OPT. LINK OUT 8MB/S	JFJ1001
JA2201 JACK	RKN1004
CN2004 KR CONNECTOR	S13B-PH-K
CN2001 CONNECTOR POST	S8B-EH
0 PCB BINDER	VEF1040
BT2271 LITHIUM BATTERY	VEM1034
JA2832 JACK	VKB1192
JA3551 JACK	VKB1193
CN2008 21P CONNECTOR	VKN1252
CN3001 32P CONNECTOR	VKN1263
CN3002 15P CONNECTOR	VKN1275
ST2271 BATTERY SOCKET	VKX1015
2007 SCREW PLATE	VNE1948
KN2001-KN2003 WRAPPING TERMINAL	VNF1084
X2271 (32.768kHz)	VSS1143
X2351 (4.433619MHz)	VSS1176
X2001 (10MHz)	VSS1188
X4001 (18.432MHz)	VSS1189
U3001 TV TUNER PACK	VXF1023

C FRJB ASSY [VWV1965]

SEMICONDUCTORS

D1301-D1304	UDZS5.6B

Mark No.	Description	Part No.
SWITCHES AND RELAYS		
	S1201, S1202	VSG1009
CAPACITORS		
	C1308, C1309	CCSRCH471J50
RESISTORS		
	All Resistors	RS1/16S###J
OTHERS		
	JA1302 3PIN JACK(VERTICAL)	VKB1189
	JA1301 YC CONNECTOR(VERTI)	VKB1190
	CN1301 15P CONNECTOR	VKN1275
	KN1301-KN1303 WRAPPING TERMINAL	VNF1084

D MAIN ASSY [VWV1955]

SEMICONDUCTORS

	IC3301	AD1895AYRS
	IC3101	AK5381VT
	IC2301	BA7655AF
	IC1103	CY62148VLL-70ZI
	IC5204	K4S161622D-TC80
	IC1101	K4S281632E-TC75
C	IC1401, IC1421	K4S561632D-TC75
	IC1001	M65672WG-C
	IC2331	MM1506XN
	⚠ IC5002	MM1562FF
	IC1301	MT48LC4M32B2TG-6
	⚠ IC4001	NJM2370R12
	⚠ IC4004, IC4006	NJM2872F05
	⚠ IC4007	NJM2880U1-33
	IC4206, IC5301, IC5321	NJU7013F
	IC3201	PCM1742KE
D	⚠ IC4008	PQ012FZ01ZP
	⚠ IC4002	PQ070XZ02ZP
	IC4003	PST3428U
	IC4005	PST3809U
	IC3402	SM8707KV
	IC4101	SN74AHC2G53HDCT
	IC3001	TC74LCX541FT
	IC3002	TC74VHC14FT
	IC5341	TC74VHC157FT
	IC3403, IC4205, IC5322	TC7WHU04FU
	IC3251	UPC4570G2
	IC5101	UPD72852AGB-8EU
E	IC5202	UPD72893AGD-LML
	IC1102	VYW2116
	IC1201	W986416DH-6
	Q2101-Q2105, Q2201, Q2203, Q2301	2SA1576A
	Q2312	2SA1576A
	Q2202, Q2222	2SC4081
	Q2302, Q2311	DTC114EUA
	Q2402, Q2403	HN1B04FU
	Q1101	HN1K03FU
	Q3201, Q3202	RN1903
	Q1102	RN4982
F	Q2001	UMF21N
	D3001, D3002, D3101-D3104	1SS355
	D5321	HVC359
	D5322	HVC362

Mark No.	Description	Part No.
	D4201	MA2ZV05
	D1111, D4001	RB521S-30

COILS AND FILTERS

F3102, F3401-F3403, F4004, F4201	DTF1069
F5101 CHIP BEAD	DTF1069
L5301, L5321	LCYA100J2520
L4202	LCYA1R2J2520
F3201 CHIP SOLID INDUCTOR	VTF1096
L5101, L5102 COIL	VTH1043
L2101 CHIP COIL (22.0uH)	VTL1067
L4201 CHIP BEADS	VTL1079
L5103-L5106 CHIP BEADS	VTL1082

CAPACITORS

C5311, C5329	CCSRCH100D50
C3253, C3258	CCSRCH101J50
C5105	CCSRCH271J50
C5325, C5327	CCSRCH330J50
C3207	CCSRCH331J50
C4208	CCSRCH390J50
C5131-C5138	CCSRCH4R0C50
C5326	CCSRCH5R0C50
C3254, C3257	CCSRCH681J50
C5121, C5122	CCSRCH8R0D50
C2208, C2317, C4002, C4009, C4011	CEVW100M16
C4034, C5203, C5322	CEVW100M16
C3251, C3255, C4001, C4004, C4029	CEVW101M16
C2101, C2221, C2331, C2405	CEVW101M6R3
C3201, C3204, C3206, C3301, C3309	CEVW101M6R3
C2301, C5102	CEVW220M6R3
C1054, C1055, C1057, C1058, C1061	CEVW221M4
C4022, C5005	CEVW221M4
C3106	CEVW2R2M50
C5321	CEVW470M16
C2308, C3102, C3107, C4003, C5205	CEVW470M6R3
C5207, C5221, C5341	CEVW470M6R3
C5301	CEVW4R7M35
C2204, C2334, C4206, C5309	CKSQYB105K10
C1901, C4014, C4019, C4033, C4036	CKSQYB225K10
C5006	CKSQYB225K10
C1501-C1507	CKSQYB475K6R3
C1004, C1012, C1014, C1029, C1034	CKSRYB102K50
C1040, C1044, C1049, C1051	CKSRYB102K50
C1110-C1112, C1207, C1208, C1307	CKSRYB102K50
C1311, C1313, C1407, C1408	CKSRYB102K50
C1427, C1428, C3303, C3307, C3408	CKSRYB102K50
C1003, C1027, C1037, C1052, C1109	CKSRYB103K50
C1206, C1305, C1308, C1310, C1406	CKSRYB103K50
C1425, C2305, C3003, C3004, C4018	CKSRYB103K50
C4020, C4207, C5214, C5222, C5224	CKSRYB103K50
C1508-C1510, C2225, C2311, C4104	CKSRYB104K16
C5306	CKSRYB104K16
C3001, C3006, C3205, C3256, C3308	CKSRYB105K10
C4107, C4203, C4209, C5120, C5124	CKSRYB105K10
C5213, C5216, C5218, C5225, C5227	CKSRYB105K10
C5323, C5342	CKSRYB105K10
C4103	CKSRYB223K50
C5328	CKSRYB473K25
C2202	CKSRYB563K16
C1002, C1005, C1007-C1010, C1016	CKSRYF104Z25

Mark No.	Description	Part No.
C1018, C1019, C1021-C1023		CKSRYF104Z25
C1025, C1026, C1028, C1030, C1035		CKSRYF104Z25
C1038, C1041, C1042, C1047, C1102		CKSRYF104Z25
C1105, C1106, C1108, C1114, C1202		CKSRYF104Z25
C1204, C1302, C1304, C1312, C1402		CKSRYF104Z25
C1404, C1422, C1424, C2102-C2106		CKSRYF104Z25
C2201, C2206, C2222, C2306, C2319		CKSRYF104Z25
C2332, C2406, C2407		CKSRYF104Z25
C3101, C3105, C3108, C3202, C3203		CKSRYF104Z25
C3252, C3302, C4006-C4008, C4010		CKSRYF104Z25
C4012, C4013, C4017, C4021		CKSRYF104Z25
C4024-C4026, C4032, C4035, C4202		CKSRYF104Z25
C5101, C5103, C5111-C5113		CKSRYF104Z25
C5118, C5119, C5123, C5125-C5127		CKSRYF104Z25
C5204, C5206, C5208-C5212, C5215		CKSRYF104Z25
C5217, C5226, C5228-C5230, C5308		CKSRYF104Z25
C5310, C5343		CKSRYF104Z25
C1001, C1006, C1011, C1013, C1017		CKSRYF105Z10
C1024, C1036, C1039, C1045, C1048		CKSRYF105Z10
C1050, C1053, C1103, C1107, C1113		CKSRYF105Z10
C1203, C1205, C1209, C1303, C1306		CKSRYF105Z10
C1309, C1403, C1405, C1409, C1423		CKSRYF105Z10
C1426, C1429, C3404-C3407		CKSRYF105Z10
C4027, C4028, C4030, C4031, C4105		CKSRYF105Z10
C4201, C4401, C4501, C5110, C5231		CKSRYF105Z10
C1056, C1059, C1062, C1101, C1104		CKSYF106Z10
C1201, C1301, C1401, C1421		CKSYF106Z10
C3402, C3403, C4015		CKSYF106Z10
C1060, C5008 (150uF/4V)		VCH1234
VC4201 (10pF)		VCM1012

RESISTORS

R1025, R1026, R1042-R1046	RAB4CQ103J
R1048-R1051, R1054, R1068, R1069	RAB4CQ103J
R1072, R1073, R5218-R5221	RAB4CQ103J
R5229, R5230, R5247, R5249-R5252	RAB4CQ103J
R5255, R5258, R5259, R5273-R5275	RAB4CQ103J
R5289, R5290	RAB4CQ103J
R1408-R1411, R4302-R4306	RAB4CQ220J
R4401, R4404, R4410, R4416, R4417	RAB4CQ223J
R4423, R4502, R4506, R4512	RAB4CQ223J
R4518, R4519, R4525	RAB4CQ223J
R1114-R1117, R4405-R4408, R4436	RAB4CQ330J
R4507-R4510, R4538	RAB4CQ330J
R1303-R1310, R1404-R1407	RAB4CQ560J
R1423-R1426	RAB4CQ560J
R1203-R1206	RAB4CQ680J
R5103	RN1/16SE5101D
R5108	RN1/16SE9101D
R1001-R1009, R1101, R1102, R1201	RS1/10S0R0J
R1301, R1401, R1421, R2017	RS1/10S0R0J
R2506, R3002, R3102, R3201, R3252	RS1/10S0R0J
R3301, R3303, R4001, R4006, R4009	RS1/10S0R0J
R4014, R4016, R4108, R4109, R5102	RS1/10S0R0J
R5207-R5209, R5292, R5322	RS1/10S0R0J
R5321	RS1/10S101J
R4013	RS1/16S1001F
R3254, R3266	RS1/16S1002F
R3253, R3265	RS1/16S1201F
R4011	RS1/16S1501F
R4012	RS1/16S1800F
R1021, R1023	RS1/16S2201F
R3251, R3269	RS1/16S2202F
R2105, R2106, R2111, R2112, R2115	RS1/16S3300F
R5104-R5107	RS1/16S56R0D
Other Resistors	RS1/16S###J

OTHERS

CN4001 CONNECTOR	S8B-PH-SM3
CN1901 7P CONNECTOR	VKN1299
CN5102 7P CONNECTOR	VKN1411
CN3001 21P CONNECTOR	VKN1425
CN4301 29P CONNECTOR	VKN1433
CN2001 32P CONNECTOR	VKN1436
CN4401, CN4501 FFC CONNECTOR	VKN1794
KN3 EARTH METAL FITTING	VNF1109
X4201 (27.000MHz)	VSS1146
X5101 (24.576MHz)	VSS1184
X4102 (27MHz)	VSS1195

E MHLP ASSY [VWV1991]

SEMICONDUCTORS

IC1	PDY081A
D1	RB521S-30

CAPACITORS

C1	CEVW101M6R3
C2–C6	CKSRYF104Z25
C7	CKSRYF105Z10

RESISTORS

R3	RAB4C0R0J
R2	RAB4C102J
R1	RS1/16S0R0J
Other Resistors	RS1/10S###J

OTHERS

CN1 7P CONNECTOR	VKN1411
CN2 CONNECTOR	VKN1571

F FLKY ASSY [VWG2444]

SEMICONDUCTORS

IC1001	PT6315

COILS AND FILTERS

L1001	LAU220J

SWITCHES AND RELAYS

S1001, S1002, S1004-S1008	VSG1009
S1003	VSX1004

CAPACITORS

C1012	CEJQ101M6R3
C1010	CEJQ220M35
C1015	CEJQ470M16
C1001-C1004, C1006-C1009, C1011	CKSRYB103K50
C1013, C1016	CKSRYB103K50

RESISTORS

All Resistors	RS1/16S###J

OTHERS

Mark No.	Description	Part No.
	CN1001 CONNECTOR	9607S-19F
	IC1002 REMOTE RECEIVER UNIT	RPM7140-H4
A	V1001 FLUORESCENT TUBE	VAW1081
	0 RUBBER SPACER(CR)	VEB1357
	1001 HOLDER	VNF1120

G POWER SUPPLY UNIT [VWR1374]

OTHERS

⚠ P101 PROTECTOR(3A)	AEK7050
⚠ P201, P401, P403, P404 PROTECTOR(1.6A)	AEK7066

H DVJB ASSY [VWV1967]

OTHERS

JA1303 DV-TERMINAL	VKB1186
CN1302 7P CONNECTOR	VKN1238

I LEDB ASSY [VWG2434]

SEMICONDUCTORS

D1101	SLR-343BBT

RESISTORS

All Resistors	RS1/16S###J

J SCRB ASSY [VWV1958]

SEMICONDUCTORS

IC104	BA4558F-HT
IC113	BU4052BCF
IC101	LA73026AV
IC114	MM1503XN
IC103, IC106, IC107	MM1506XN
IC105	MM1511XN
IC102, IC301	TC74HC4053AF
Q101, Q120–Q122, Q124	2SA1576A
Q118	2SC1740S
Q104, Q307–Q309	2SC4081
Q109, Q110	DTA124EUA
Q115, Q123	DTC124EUA
Q105, Q106	HN1C03FU
Q281, Q289	RN2903
Q102, Q119	RN4903
D113–D117, D130–D133, D181	1SS355
D184, D187, D188, D307	1SS355
D134	RB501V-40
D182	UDZS12B
D101–D112, D118–D121	UDZS5.6B
D123–D127, D129, D135–D150	UDZS5.6B
D185, D186	UDZS5.6B

COILS AND FILTERS

L103	LCYA220J2520

SWITCHES AND RELAYS

RY101	VSR1017

CAPACITORS

C142–C145	CCSRCH102J50
C225, C226	CCSRCH220J50
C307, C308	CCSRCH221J50
C113, C114, C127–C130	CCSRCH471J50
C203–C206	CCSRCH471J50
C115, C116, C227, C228	CEANP100M16
C158, C159, C165, C166	CEAT100M50
C168, C169, C212, C219–C221	CEAT100M50
C156, C161, C182	CEAT101M10
C103–C105, C147, C209, C214	CEAT101M16
C218	CEAT101M16
C151, C152, C160, C167, C170	CEAT102M6R3
C138	CEAT1R0M50
C102, C117, C118, C123–C126	CEAT220M25
C139–C141, C149	CEAT220M25
C207, C208	CKSQYB105K16
C110	CKSQYF105Z16
C121, C146, C150, C153, C162	CKSRYB103K50
C222–C224	CKSRYB105K10
C109, C135–C137, C148	CKSRYF104Z25
C154, C155, C157, C164, C180	CKSRYF104Z25
C200, C201, C213, C217, C301	CKSRYF104Z25
C303, C309, C401, C402	CKSRYF104Z25
C111, C112	CKSRYF105Z10

RESISTORS

R121, R126, R140, R143–R148	RS1/16S75R0F
R151, R207	RS1/16S75R0F
Other Resistors	RS1/16S###J

OTHERS

CN204 CONNECTOR	HLEM15S-1
CN203 CONNECTOR	HLEM35S-1
JA101, JA102 CONNECTOR	VKB1157
101, 102 SCREW PLATE	VNE1948

6. ADJUSTMENT

6.1 TUJB ASSY ADJUSTMENT

* It is not necessary to adjust the ASSY normaly when exchanging the ASSY. But the adjustment is necessary when exchanging the Tuner Module and IC3003 VIF/SIF IC.

No.	Adjustment Name	Adj. Point	Measurement Point	Adjustment Value	Adjustment State
1	VCO freerun frequency (AFC voltage) adjustment	L4002	The solder land named "AFT2" (upper side) Q3901-Emitter	1.90V ± 0.20V Note1	Terrestrial tuner input /through output. Any channel, RF Input ≥ 60dBu System = B/G, I or D/K Manual Adjust (in GUI of Manual Ch Setting) = ON Note1
2	AGC start point adjustment	VR3901	CN3003 Pin1 (AGC)	3.80V ± 0.20V	Terrestrial tuner input Ch = E9(203.25MHz), Video= Blackburst RF Input = 60.0 ± 1.0dBu System = B/G, I or D/K

Note 1 : The adjustment spec. is defined without the thermal drift after the power on.
Therefore, start the adjustment at least 10 minutes after the power on.

B TUJB ASSY

SIDE A

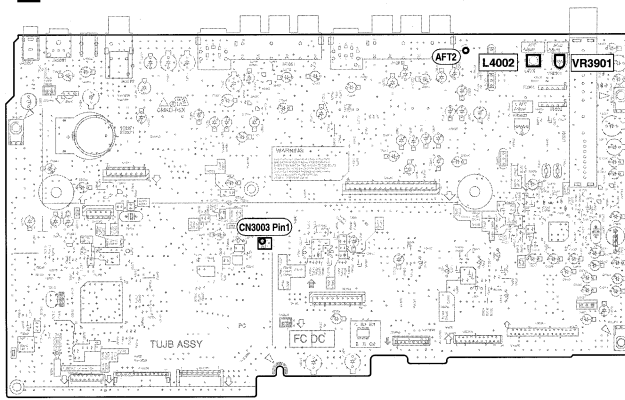


Fig.1 Adjustment Points (TUJB ASSY)

6.2 MAIN ASSY ADJUSTMENT

* It is not necessary to adjust the ASSY normaly when exchanging the ASSY but confirm the data.

No.	Adjustment Name	Adj. Point	Measurement Point	Adjustment Value	Adjustment State
1	Master clock free-running adjustment (Clock system adjustment)	VC4201	MAIN ASSY IC3402 Pin8 (XTO) (SM8707KV)	27.000000MHZ ± 130Hz	No signal input

D MAIN ASSY **SIDE A**

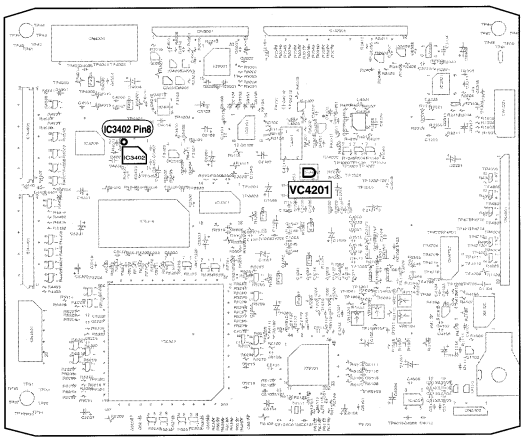


Fig.2 Adjustment Point (MAIN ASSY)

7. GENERAL INFORMATION

7.1 SET UP

7.1.1 MODEL TYPE SETTING

• The Setup is Necessary When :

a) When the MAIN Assy is replaced
b) When the TUJB Assy is replaced
c) When the MAIN Assy and TUJB Assy are replaced

• How to Setup the Model

1) After power on, the following screen is displayed on TV monitor.
Press " 32 " by using the remote control unit for service(GGF1381).

```
[ Recorder 's  Model  Setting]
  Input the number by using the remote for Service.

  > --

  Input  No.        Model
  [    31      :  DVR-310-S      ]
  [    32      :  DVR-510H-S     ]
```

2) After 1), the following screen is displayed on TV monitor.
Press "012 (WY)" or "022 (WV)" by using the remote control unit for service.

```
[ Recorder 's  Type  Setting]
  Input the number by using the remote for Service.

  > ---                  (Type -- ,  Region  No. -)

  Input  No.        Type
  [    01      :  WY      <Europe>          ]
  [    02      :  WV      <UK>              ]
```

The setting complete when OSD is disappeared.

3) Unplug the power cable.
4) Reset the recorder to all its factory settings.
   1. Make sure that the recorder is on.
   2. Press and hold [STOP] and press [STANDBY/ON] key on the front panel.
      The recorder turns off with all settings reset.
5) Enter the Service Mode and then confirm the Model Name " DVR-510H-S/W* ".
   1. Make sure that the recorder is on.
   2. Press [ESC] then [DISP] keys by using the remote control unit for Service.

```
DVR-510H-S/ W*
  SYSCON   : 2.00
             ComRev      : 1.1140.2.6  $
             FirmRev     : 1.2834.2.4  $
             AppRev      : 1.3873.2.8  $
  TUFLCON  : 2.18   F                  OK
    DRIVE  : DVD-RW DVR-106            OK
             1.01L
             CBT0900720WL              OK
     H D D  : ----
    DEVICE  : PRISM=ES 2.0C
    REGION  : 2
         C  : *********
```

Notes :

1) After the setting complete, you can NOT CLEAR the seting data.
Make sure the pressing number.
2) " NG " is appeared on TV when unsuitable number is pressed.
In such a case, please unplug the power cable and plug it again. Then restart the model setting.

7.1.2 CPRM ID NUMBER AND DATA SETTING

■ Use DVD Recorder DATA DISC [GGV1134], Service Remote Control Unit [GGF1381] and Remote Control Unit of the model [VXX2888 or VXX2889]

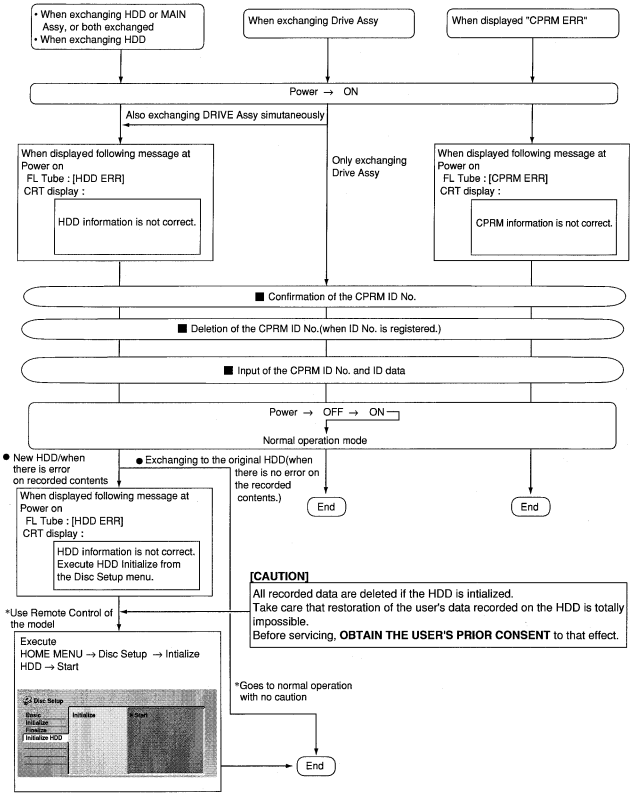
■ Entering the ID Number and ID Data for DVD Recorder

For the DVD recorder,it is necessary with the recoding/playback of DVD-RW disc to set an individual number (ID number) and ID data to each recorder. If the number and data are not set correctly with the following procedure, operations in the future may not be guaranteed. You will find the ID number to be set on the ID label on the rear panel.

Important: If no ID label is found on the rear panel, write down the specified ID number by checking it according to "How to confirm the ID number" shown below.

■ The Input is Necessary When:

- " CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY , DRIVE ASSY or the HDD is exchanged.

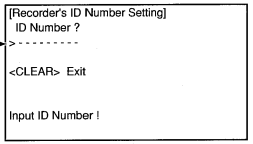

• When exchanging HDD or MAIN Assy, or both exchanged
• When exchanging HDD
When exchanging Drive Assy
When displayed "CPRM ERR"
Power → ON
Also exchanging DRIVE Assy simutaneously
Only exchanging Drive Assy
When displayed following message at Power on
FL Tube : [HDD ERR]
CRT display :
HDD information is not correct.
When displayed following message at Power on
FL Tube : [CPRM ERR]
CRT display :
CPRM information is not correct.
■ Confirmation of the CPRM ID No.
■ Deletion of the CPRM ID No.(when ID No. is registered.)
■ Input of the CPRM ID No. and ID data
Power → OFF → ON
Normal operation mode
● New HDD/when there is error on recorded contents
● Exchanging to the original HDD(when there is no error on the recorded contents.)
End
End
When displayed following message at Power on
FL Tube : [HDD ERR]
CRT display :
HDD information is not correct.
Execute HDD Initialize from the Disc Setup menu.
[CAUTION]
All recorded data are deleted if the HDD is intialized.
Take care that restoration of the user's data recorded on the HDD is totally impossible.
Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
*Use Remote Control of the model
Execute
HOME MENU → Disc Setup → Initialize
HDD → Start
Disc Setup
Basic
Initialize
Finalize
Initialize HDD
Initialize
Start
*Goes to normal operation with no caution
End

How to Input the ID Number and ID Data

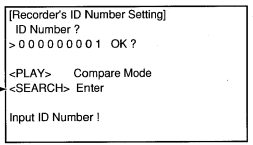
Note:
Be sure to enter the ID number in Stop mode.
Use the service remote control (GGF1381) for operations. Only opening/closing of the tray are performed from the player.
The ID data disc is swept out automatically after the recorder has read the data from it.

① To enter the input mode, press [ESC]+[STEREO] sequentially in a status with no ID number set, such as after FLASH-ROM downloading.

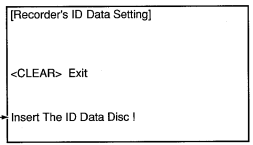
② As number input is enabled when the unit enters the input mode, input the 9-digit ID number.
(The entered number is also displayed on the FL display.)



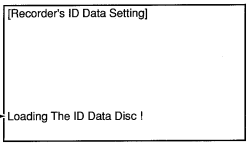
③ After inputting the number, press [SEARCH] to register the ID number.



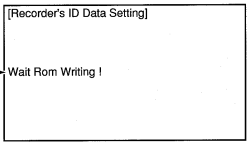
④ When the ID number has been registered, the unit enters the ID data input mode. (The FL display indicates "INSERT ID.")
In this condition, place the ID data disc on the tray and close the tray using the CLOSE key "■/⏏" on the player.



⑤ While the data are being read, the message shown in the figure at left is displayed on the screen.
(The FL display indicates "LOAD ID.")

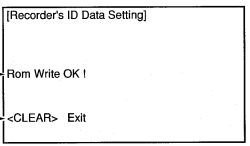


⑥ When the ID data have been read, the data are written to the FLASH-ROM.
(The FL display indicates "WRITE ID.")



⑦ When the ID data have been written to the FLASH-ROM, the message "Rom Write OK" is displayed on the screen.
(The FL display indicates "ID DATA OK.")

⑧ After confirming this message, press [CLEAR] to exit the input mode.

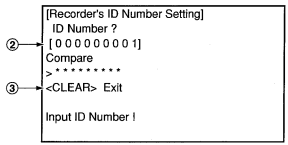


How to Confirm the ID Number

① Press ESC + STEREO sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② The set ID number is displayed on the screen (and on the FL display), permitting you to confirm it.

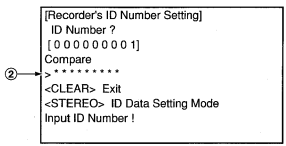
③ To exit this mode, press CLEAR.



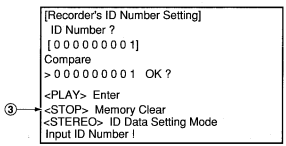
How to Clear the ID Number

① Press ESC + STEREO sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② Input the same number as the ID number you have set.



③ After inputting the number, press STOP.
Only when the entered number matches the set ID number, the ID number is cleared and the unit exits this mode.
If the numbers do not match, you must return to step 2.
(STOP is not accepted until 9 digits are entered.)



7.2 DIAGNOSIS

7.2.1 SERVICE MODE

For service operations, use the GGF1381 remote control unit for service.
The Service-mode screens consist of nine mode screens, which are classified into such rough categories as recording system and VR playback system, and their subscreens.

- **How to enter Service mode** : Press the ESC then DISP keys in turn while no GUI is displayed. The first screen (version information, etc.) shown below is displayed.
- **How to exit Service mode** : Press the ESC key.
- **How to advance to the next Service-mode screen**
  : While the first screen is displayed, press directly one of the keys 1-9. For service, use the keys 2, 4 or 5, as shown below.
- **How to advance to a subscreen within the same Service-mode screen**
  : Press the DIG/ANA key. Pressing the DIG/ANA key repeatedly will change the subscreens within the same Service-mode screen cyclically.

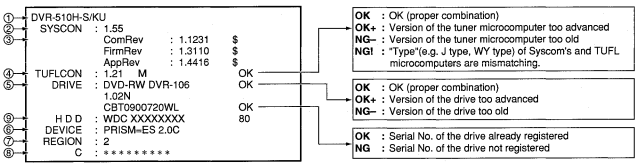
■ The Service-mode screens to be used for service are as follows:

1 = First screen: Version information, etc.
2 = Second screen: ATA/ATAPI debug screen (Writer data)
4 = Fourth screen: Error log for the VR recording system
5 = Fifth screen: Error log for the VR playback system

Note: After entering one of the Service-mode screens, if you wish to shift to another Service-mode screen, exit Service mode first, then reenter Service mode and select your desired Service-mode screen.

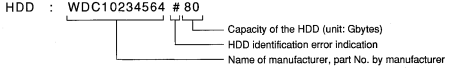
■ Description of Each Service-mode screen

1. First screen (version information, etc.)



① Model name/destination
② Version of the recorder software
③ Revision No. of the system-control computer software (Edition administration No. [from top to bottom, common software, firmware, application software])
④ Version No. of the tuner microcomputer, Mask or flash (M: Mask type, F: FLASH type)
⑤ Information on the built-in drive (Model name, version No., serial No.)
⑥ Version No. of PRISM
⑦ Region No.
⑧ CPRM data (CPRM key No.)
⑨ Data of the built-in HDD, capacity of the HDD

- **Details on HDD data are described below:**



If any abnormality exists in HDD connection, the indications shown in Table 1 below are displayed.

Table 1: HDD data indications according to various HDD connection statuses

HDD identification conditions	Example of HDD data to be displayed	Remarks
Failure in physical identification of HDD (no connection, defective HDD, interface error)	Blank space	
Physical identification of HDD possible, but not identified	WDC 10234564 # 80	"#" is displayed as HDD identification error
Physical identification of HDD possible, HDD identified, but failure in physical formatting	WDC 10234564 ! 80	"!" is displayed as HDD identification error
Physical identification of HDD possible, HDD identified, and correct physical formatting (HDD correctly identified)	WDC 10234564 80	

While the first screen shown above is displayed, press the DIG/ANA key to enter the subscreen shown below.
Note: Each time the DIG/ANA key is pressed, the display changes between the first screen and its subscreen.

• Subscreen 1: Result of error-rate measurement

ERR RATE : x.xe-x/

Note: Be sure to start playback after displaying this subscreen to calculate the error rate.

During playback in VR mode, the average error rate of the past 10 VOBUs is displayed, and during playback in DVD-Video or Video mode, the average error rate of the past 256 sectors is displayed. During playback in VR mode, the rotation rate of the drive (/: normal speed, no display = double speed) is also displayed.

• Subscreen 2: HDD information

HDD Info
Life Time: 87599h 09m 05s

Cumulative HDD-on time

• How the data on cumulative HDD-on time are processed in memory

Storage place: Backup SRAM, Flash ROM

Timing of referring to the data on cumulative HDD-on time: When the power is turned on, the backup SRAM is referred to regarding the data on cumulative HDD-on time, and the data are stored in the RAM. If referring to the backup SRAM fails, the flash ROM is referred to.

Timing of updating the data on cumulative HDD-on time: While the HDD is on, the data on cumulative HDD-on time in the RAM is updated every 3 seconds, and every time updating is executed the data are stored in the backup SRAM. When the power is turned off, the data are stored in the flash ROM.

How to clear the data on cumulative HDD-on time

Backup SRAM: When the HDD Identification Setting is performed, the data on cumulative HDD-on time are automatically cleared. The HDD Identification Setting is automatically performed when the CPRM setting is performed on the CPRM setting screen (to display the CPRM setting screen, press the ESC then the STEREO keys).

Notes: The data on cumulative HDD-on time are not cleared when resetting to factory-preset values is performed.
The data on cumulative HDD-on time are not cleared when the system-control computer software is downloaded.

Flash ROM: The data on cumulative HDD-on time cannot be cleared (they are not cleared even if resetting to factory-preset values is performed or if the system-control computer software is downloaded).

Note: The data on cumulative HDD-on time in the flash ROM can be cleared if you clear the data in the backup SRAM following the above-mentioned procedures then turn off the power of the unit, because the data in the backup SRAM are stored in the flash ROM when the power is turned off.

2. Second screen (ATA/ATAPI debug screen)

Subscreen 1 of the second screen is displayed when the ESC, DISP, then "2" keys are pressed, in that order.
Note: Each time the DIG/ANA key is pressed, the display changes cyclically among subscreens 1 to 4.

• Subscreen 1: Command log (ALL) of ATA/ATAPI DEBUG OSD

```
ATA/ATAPI History-ALL
 32 0100000000000A000          OK
 32 2A00000DEBB00006 3000      OK
 32 2A00000DF1E00006 3000      OK
 32 2A00000DF8100006 3000      OK
 32 2A00000DFE400006 2000      OK
 32 2A00000E046000063000       OK
 32 2A00000E0A900006 3000      OK
 32 2A00000E10C00006 3000      OK
>32 2A00000E16F00006 20002 3A00
```

• Subscreen 2: Command log (ERROR) of ATA/ATAPI DEBUG OSD

• Subscreen 3: Writer mentenance information of ATA/ATAPI DEBUG OSD

The cumulative power-on time and error log that are administered by the writer are displayed. Such information is obtained when the power is turned on. Thereafter, each time the SEARCH key on the remote control unit for service is pressed while subscreen 3 is displayed, the updating command is sent, and the data on the subscreen are updated. Care must be taken when updating this subscreen, because an undesired command is inserted if it is executed while recording, etc.

```
ATA/ATAPI Writer MaintenanceInfo
① Power ON      :00 00 00 0000 00000000:
  0102:56       :01 00 00 0000 00000000:
  DVD           :02 00 00 0000 00000000:
② R0053:48      :03 00 00 0000 00000000:  <- Error log for the Writer
③ W0022:16      :04 00 00 0000 00000000:
  CD            :05 00 00 0000 00000000:
④ R0034:04      :06 00 00 0000 00000000:
⑤ W0000:00      :07 00 00 0000 00000000:
                  00-00
```

① Power-on time/cumulative power-on time
② Duration of emission of the laser diode (LD) for DVD-R/DVD while reading
③ Duration of emission of the LD for DVD-W/DVD while writing
④ Duration of emission of the LD for CD-R/CD while reading
⑤ Duration of emission of the LD for CD-W/CD while writing

• Subscreen 4: ATA/ATAPI DEBUG OSD_LD degradation judgment

The degrees of degradation of the LD (laser diode) for the writer (LDs for CD and DVD separately), temperature, and RF level are displayed. To update the data on the subscreen, press the SEARCH key on the remote control unit for service while subscreen 4 is displayed. See Table 2 below for a description of each item and the conditions for updating data.

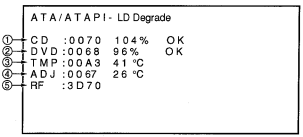


Table 2: Description of each item and conditions for updating data

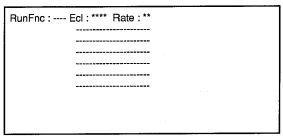
No.	Item	Description	Conditions for updating by pressing the SEARCH key	Remarks
①	CD	Degradation judgment of LD for CD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray	*1
②	DVD	Degradation judgment of LD for DVD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray	*1
③	TMP	Current temperature inside the Writer	No disc inserted in the disc tray	*1
④	ADJ	Temperature (approx. 25°C) inside the Writer during adjustment	No disc inserted in the disc tray	*1
⑤	RF	RF level (16-bit data, proportional calculation performed using the actual RF level value with 2.5 V = 0xFFFF as the maximum value, displayed in 4-digit hexadecimal)	During playback of disc medium	

*1 : For correct judgment, after leaving the unit at a normal temperature for some time, judgment must be performed immediately after the unit is turned on with no disc loaded.

3. Fourth screen (VR-recording-related error log)

Subscreen 1 of the fourth screen is displayed when the ESC, DISP, then "4" keys are pressed, in that order.
Note: Each time the DIG/ANA key is pressed, the display changes cyclically among subscreens 1 to 11.

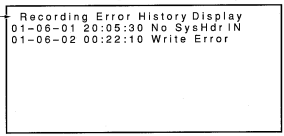
• Subscreen 1:



• Subscreens 2 and 3:

These subscreens are not for service use.

• Subscreen 4: Error log for VR recording



① Recording-related error log for the last 18 errors, divided into 2 screens
(generation time [year-month-day, hour:minute:second], error data in simplified description)

Notes:
- For details on error messages, see Table 4 "Description of VR-recording-related errors".
- The two error-log screens can be switched by pressing the SPEED+ or SPEED- key.

• Subscreens 5 to 11:

These subscreens are not for service use.

4. Fifth screen (Error log for VR playback)

Subscreen 1 of the fifth screen is displayed when the ESC, DISP, then "5" keys are pressed, in that order.
Note: Each time the DIG/ANA key is pressed, the display changes cyclically among subscreens 1 to 4.

• Subscreen 1:

```
G:01–01  00m00s00#–. –e––  00.00M
Tgt : STOP  Now : STOP  Spd : 0
Man : STOP  Sub : 0  VBF : 000  ABF : 00
TrMd : STOP  TrSt : 0  TNo :   Ver : 00
RvMd : STOP  RvSt : 0  DNo :   Aer : 00
CcSt : STOP      Id : 00000000
Stc : 00000000  Tpp-Av1 : +-0  V-A : +-0
MPEG2  720x480 A0 AC-3 2ch 0256k
NT  ASP : 43  CGMS : 0  APS : 0  Src : 0
END : 00m00s00    Cell : 000
```

• Subscreen 2: Error log for VR playback

```
①  G:01–01  00m00s00#–. –e––  00000000
       m s  Message              m  s  Er
   G01 : 0000  Tr : Nullblk
②  L02 : 1230  Tr : SchLate
   L02 : 4103  Tp : VobDif +
   L02 : 4104  Tp : VobDof –
```

① Data on location of the display
Original(G)/play list (L), title No., chapter No. (X:XX-XX), time of the display (min, sec, frame [XXmXXsXX]), busy mark of the virtual mechanical-control computer (#), error rate of the transfer data (X.XeXX), playback logical address (ID [XXXXXXXX])

② Error message log
Original(G)/play list (L), title No., time of generation (min, sec [XXX:XXXX]), playback-related error log for the last 13 errors (XX:XXXXXXX)

Notes:
- For details on error messages, see Table 3 "Description of VR-playback-related errors".
- If a VR-playback-related error is generated, a problem in data reading from the disc may be suspected. (The possibility of a problem on the drive side is high.)

• Subscreens 3 and 4:

These subscreens are not for service use.

Table 3: Description of VR-playback-related errors

Error Message	Description
Tr : NullBlk	Transfer task: NULL at the top block (Detecting NG stream made at the DVR-1000 series and starting protection process.)
Tr : ReadErr	Transfer task: ATA read error
Tr : SchLate	Transfer task: ATA search late
Tr : SemTOvr	Transfer task: Timeout for gaining semaphore (no synchronization with the display)
Tr : NaviErr	Transfer task: Inconsistency between NAVI (navigator) of management data and actual NAVI
Tr : OrderEr	Transfer task: Inconsistent order
Mn : Av1Hang	Main task: Detects hang-up of AV decoder and starts recovery
ERR_RCV!	TPP task: Detects hang-up of AV decoder and starts recovery
Tp : VobDif+	TPP task: The decoder STC advances by 1 VOBU hour.
Tp : VobDif-	TPP task: The STC of the management information advances
Tp : midNULL	TPP task: The management information pointer designated was NULL.
Tp : ScanNg	TPP task: Failure to set the TPP memory when scanning was canceled.
Tp : RStepEr	TPP task: Although the reverse step had failed, the operation was forcibly terminated because the top cell was located.
Tp : tppErr	TPP task: Inconsistency occurred.
Rv : 1stTOvr	Reverse playback task: Timeout for waiting for interruption to the top VOBU immediately after starting decoding
Rv : OpnTOvr	Reverse playback task: Timeout for waiting for B-picture of the open GOP immediately after starting decoding
Rv : OplTOvr	Reverse playback task: Timeout for waiting for I-picture of the open GOP immediately after starting decoding
Rv : LnkTOvr	Reverse playback task: Timeout for waiting for link
Rv : LnkFail	Reverse playback task: Starts compensation by detecting link failure
Rv : R2FTOvr	Reverse playback task: Starts retrial after detecting timeout from reverse pause to forward pause
Rv : TopVbEr	Reverse playback task: Forced termination because of a possible error of the top data during reverse normal playback
Rv : OrderEr	Reverse playback task: Inconsistent order
Av : B/CTOvr	AV1: Buffer-clear timeout
Av : StrmOvr	AV1: Timeout for waiting for stream ready
Av : TpmTOvr	AV1: Timeout for TP mode change
Av : SpmTOvr	AV1: Timeout for a step command
CC_OS_ERR	Closed caption task: OS error

Abbreviations:

STC = System Time Clock
VOBU = Video Object Unit
GOP = Group Of Picture
B-picture = Bidirectionally predictive-picture
I-picture = Intra-picture
P-picture = Predictive-picture
TP mode change = AV1 term (Trick Play mode change)

Table 4: Description of VR-recording-related errors

Error Message	Description	Error Message	Description
Non Err *	Normal	Invalid TMVMG	Invalid TMP_VMGI content
DRAM NG	Abnormality in access to the work DRAM	Unmatch Stamp *	Impossible to modify because of nonmatching time stamps
SRAM NG	Abnormality in access to the backup work SRAM	Virgin DISC	Blank disc
CPRM IC NG	Inappropriate CPRM IC	Fail Repair	Repair failed.
Drive Destroy	The drive has crashed.	ReadOnly DISC	Because some data are invalid, data cannot be written.
MKB REVOKED	Error in gaining data	Rsrv RSV NG	R-zone reserve failed.
WM Cracked	WM cracked	Rsrv Cls NG	R-zone Closure failed.
VBR-SRAM NG	Abnormality in VBR SRAM	Rsrv Rpr NG	R-zone repair failed.
BK BATT Down	Backup RAM data has been erased.	Bdr Opn	Opening of border failed.
BK FSYS Dirty	Backup RAM data has been written on the file system.	Bdr Cls	Closing of border failed.
Stream NG	Inappropriate input stream data	Format NG	Formatting failed.
Strm Start NG	Failure to start encoding (reasons not clear)	OPC NG	OPC failed.
AVEnc Hang	Inappropriate MPEG encoder	PCA Full	PCA has been used up.
No SysPkt IN	System packet is not input periodically	RMA Full	RMA has been used up.
Strm Start NG	Timeout waiting for system packet input at the beginning	SW Vrec mode *	Switching to video recording routine is required.
IN Encode *	Changes cannot be made in the process of encoding	SW Vpb mode *	Switching to video playback routine is required.
EncModule Hang	Encoder routine's hung up.	NV Pok MK Err	Error in creating NAVI pack
Ourob Strm NG	Inappropriate stream data to the Ouroboros input	NV Pok DMA Err	Inappropriate NAVI pack DMA
WaterMark Det	Watermark detected	Cell Close NG	Cell closure failed.
BUF Overflow	Overflow of the stream buffer	Something *	Undetermined error
Drive Hang	The drive is hung up.	Status NG *	Abnormality in change of statuses
Write Err	The drive failed to write and could not be recovered.	Irr Action *	Incorrect action
Read Err !	Reading failed. ECC failed, etc.!	Abort *	Cancellation
Drv Hard Err !	Abnormality in the drive hardware or firmware	Repair Exec	Repairing has been executed.
Mech No_Res	No response from the mechanical-control computer	Format Exec	Formatting has been executed.
Drv TimeOut	Timeout waiting for drive operation	BUG	Some bugs
NWA Exhaust	NWA surpassed and impossible to use	BusReset Done	Bus Reset has been executed.
MKB Invalid	MKB reading error.	Task No Activ	Task has not been activated.
Drv Err !	General error of the drive	Mem get NG	Video mode memory has not been ensured.
DISC Full	No further data can be written because the disc is full.	V Rsv RzoneNG	Video mode reserve R-zone failed.
No More Info *	No more space in the internal work-management area	Tracon Tm NG	Video Mode Tracon transfer has not been completed.
No Perm *	No permission to write to the disc	DRAM CLR Err	Video Mode DRAM (Stream Buffer) clear failure
Limit Over *	Standard maximum limit exceeded	VTSI_B Wr Err	Video Mode VTSI BUP write error
Rec Pause *	No operation permitted during recording pause	VTSI Wr Err	Video Mode write error
No Video *	No video input (not locked)	TMP_VMG WrErr	Video Mode TMP_VMGI write error
Relocation Do	VR-recording data was relocated.	CLS Rzon Fail	Video Mode Closure R-zone failure
Invalid Param *	Invalid parameter	V Categ ID NG	Inappropriate Category ID
Protect Src *	Source to be recorded is copy-protected.	V Cate Inf NG	Inappropriate Category Information
Now Busy *	In the process of the emergency processing	V Ext TY NG	Typing error
Invalid Disc *	The disc cannot be recognized.	V Ext MAX Ovr	Count MAX exceeded
Invalid UDF *	Invalid UDF content	V ExtToo Big	The extension file is too large.
Invalid VMG *	Invalid VMG content	HDD Destroy	HDD not recognized on the bus.

Notes;

- Any error message marked with * is displayed "RecErr : ---------" on the Subscreen 1 of the fourth screen.
- [ENC] : Indicates an error of the MPEG encoder
  [DRV] : Indicates an error of the drive system
- In a case of an error in the drive system, scratches or dirt on a disc, or a problem of the drive itself (dirty pickup) may be suspected.

Abbreviations:

ECC = 4 byte Code for Error Correction
UDF = Universal Disc Format
PCA = Power Calibration Area
OPC = Optimal Power Control
NWA = Next Writable Address
VMG = Video Manager
RMA = Recording Management Area
MKB = Media Key Block
TMP_VMGI = Temporary Video Manager Information
Border = from Lead-in to Lead-out

Table 5: Description of VR-recording-related errors (related to the HDD)

Error Message	Description
HDD unauthor	Inconsistent HDD serial No.
TT Rec Over	Title recording time full
HDD Reset Done	HDD Reset executed
HDD Buff High	Higher-level process executed for the HDD buffer
HDD Trans Err	DMA error in HDD copy transfer
HDD Zero WR	MBR readout generated
HDD Initialize	HDD initialized
HDD MBR NG	Inconsistent MBR data
HDD SIG NG	Inconsistent HDD Management Data Magic
HDD INFO BAD	Incorrect HDD Management Data
HDD IRRG POFF	Abnormal power off
HDD SMART NG	Inappropriate HDD SMART
VCHDD Info NG	Obtaining Video Mode Copy HDD Cell information failed
VC Pck Anl NG	Analyzing Video Mode Copy Pack failed
VC VOBU SizeE	Inappropriate Video Mode Copy VOBU Size
Strm TransfNG	Inappropriate Video Mode Copy Stream Transfer
VC FlushC NG	Inappropriate Video Mode Copy Flush Cache
VC Transf Stp	Video Mode Copy Transfer Stop
VC CopyCancel	Video Mode Copy Cancel
VC Idling NG	Video Mode Copy idling failed
VC TSO BLK NG	Video Mode Copy TSO Block transfer not completed
VC Cell Max	Maximum number for Video Mode Copy Cells exceeded
VC HDD Inf NG	No information on Video Mode Copy HDD
VC HDD C Err	Inappropriate Video Mode Copy HDD content

Table 6: List of Key Codes

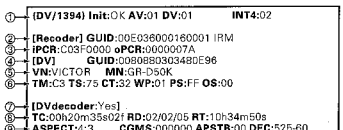
How to enter each check mode
Test mode remote control unit : [A8**]
Remote control unit supplied with the DVR : [AB**]

No.	Check Item	Key Input	Operation / purpose	Remarks
1	EE system (same as preview)	[ESC] → [A.MON]	Turns on/off EE mode cyclically	Make sure that CGMS = 11 becomes when CGMS = 10 is input. EE mode: Simulation mode for recording status
		[PLAY]	Starts the EE system in EE mode (main-unit setting rate)	
		[STOP]	Stops the EE system in EE mode	
2	Error-rate measurement	[ESC] → [SIDE8]	**V-mode recording:** After recording for 10 seconds, the unit starts playback while displaying the error rate. **DVD-Video:** The error rate is automatically measured, then the result will be displayed.	For details, see " 7.2.3 ERROR RATE MEASUREMENT ".
3	Settings for specific areas	[ESC] → [CHP/TIM]	Enters Adjustment mode for AVIO settings	Settings are made for the selected input (TUNER, LINE). For details, see " 7.2.4 SETTINGS FOR SPECIFIC AREAS ".
		[ESC]	Determines the settings, then exits Adjustment mode	

How the ESC code is processed
• When the ESC code is received, ESCAPE mode is entered, but in combination with the code(s) that follow(s), a specific meaning is added.
• If ESC codes are received continuously, ESCAPE mode is retained.

7.2.2 DV DEBUG MODE

Press the ESC, DISP, then "3" keys, in that order.



Boldface alphanumerics : Fixed indications
Nonboldface alphanumerics : Variable indications

No.	Item	Description	Remarks
①	Init	Whether the initialization of uPD72693A (1394LINK & DVcodec IC) has been completed (OK) or not (NG)	In a case of NG, communication with uPD72693A may have failed.
	AV	Number of AV devices on the local bus	
	DV	Number of DV devices on the local bus	If the number does not become 01 even if a DV device is connected, identification of that device fails.
	INT4	Number of executing INT4(PIO) interrupt processing routines until a POWER ON notification arrives from uPD72693A (normally, 02)	
②	GUID	GUID set in ConfigROM of the unit	In a case of ROOT (IRM), IRM is displayed at the rightmost of the GUID indication
③	iPCR	IPCR value of the unit	
	oPCR	oPCR value of the unit	
④	GUID	GUID set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. If the connected DV device is ROOT (IRM), IRM is displayed at the rightmost of the GUID indication
⑤	VN	Vendor name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the vendor name may not be set in ConfigROM.)
	MN	Model name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the vendor name may not be set in ConfigROM.)
⑥	TM	Transport Mode data obtained from the DV device	Data are displayed only if one DV device is identified.
	TS	Transport State data obtained from the DV device	
	CT	Cassette Type data obtained from the DV device	
	WP	Copy-protection data obtained from the DV device	
	PS	Power-state data obtained from the DV device	
	OS	Output signal mode data obtained from the DV device	
⑦	[DVdecode:XXX]	Whether Yes (in the process of requesting DV input) or No is indicated in XXX	Normally, Yes is indicated only when CH is set to DV

No.	Item	Description	Remarks
⑧	TC	Time-code data of the DVdecode Stream, or response data of the Time Code command	Stream time-code data are obtained when playback in the forward direction is performed. Otherwise, time-code data are obtained through an AV/C command.
	RD	Rec Date of DVdecode Stream	
	RT	Rec Time of DVdecode Stream	
⑨	ASPECT	Aspect Ratio of DVdecode Stream	
	CGMS	CGMS of DVdecode Stream (from left to right, CGMS data of bits 5-4: Audio ch2, bits 3-2: Audio ch1, and bits 1-0: Video)	Recording of DV input cannot be performed unless the value of CGMS is 00.
	APSTB	APS trigger bit of DVdecode stream	
	DEC	With/without DVdecode stream input	With input: Signal type (525-60, 625-50, 1125-60, 1250-50, or Invalid) is indicated. Without input: "No" is indicated.
⑩	SF	Sampling Frequency of DVdecode Stream	If SF is 44 kHz, it is considered that 44.1-kHz audio is input, and sound is muted on the unit.
	QU	QUANTIZATION of DVdecode Stream	
	AMODE	AUDIO MODE of DVdecode Stream	
⑪	[DVencode:XXX]	Whether Yes (in the process of requesting DV output) or No is indicated in XXX	Normally, Yes is indicated only with HDD or DVD playback
⑫	TC	TIME CODE of DVencode stream	
	RD	REC DATE of DVencode stream	
	RT	REC TIME of DVencode stream	
⑬	ASPECT	Aspect Ratio of DVencode stream	
	CGMS	CGMS of DVencode stream (common to video, audio ch1 and audio ch2)	Normally, sources other than CGMS=00 are not output.
	APSTB	APS trigger bit of DVencode stream	

■ Simple Diagnosis

Symptoms	Location in the Debug Screen	Items to be Checked, and Conditions	Possible causes
No operation for either DV input or output	①	Check the init indication: OK: Initialization of DV-related LSIs (IC5101, IC5202) appropriately completed NG: Communication failure between DV-related LSIs (IC5101, IC5202) and HOST microcomputer (IC1001). Initialization of DV-related LSIs (IC5101, IC5202) has not been completed properly.	Defective IC, defective soldering, defective power supply, etc.
		Check the number of DV devices when one DV device is connected to the recorder: 01: The connected DV device is correctly identified. Other than 01: The connected DV device is not correctly identified.	Defective DV terminals, improper connection of the DV-terminal board, defective IC, defective cables, an IEEE 1394 device other than the DV device connected
No picture nor sound for DV input	⑦	Check of DV decoding when the recorder channel is set to DV: Yes: The recorder is in the process of a DV input operation No: The recorder is not executing a DV input operation	Defective IC, defective soldering, defective power supply, etc.
	⑨	Check DEC: 525-60: An NTSC DV signal is input from the DV device. 625-50: A PAL DV signal is input from the DV device. No: No DV signal is input from the DV device.	Defective DV terminals, improper connection of the DV-terminal board, defective IC, defective source device **Note:** As to a model having the Input Line System setting, If the setting and the actual input signal system do not match, no picture appears.
DV input recording impossible	⑤	Check CGMS: 00: A copy-permitted source is being input. Other than 00: A copy-protected source is being input.	Recording cannot be performed for a copy-protected source.
No sound for DV input	⑩	Check SF: 32 khz: An audio signal with 32-kHz sampling frequency is being input. 48 khz: An audio signal with 48-kHz sampling frequency is being input. 44 khz: An audio signal with 44.1-kHz sampling frequency is being input.	An audio signal with 44.1-kHz sampling frequency is muted.
No picture nor sound for DV output	⑪	Check DVencode during DVD/HDD playback: Yes: The recorder is in the process of a DV output operation No: The recorder is not executing a DV output operation (No is also displayed during playback of copy-prohibited sources or simultaneous-recording/playback.)	Defective IC, defective soldering, defective power supply, etc.

7.2.3 ERROR RATE MEASUREMENT

How to enter Error-Rate Measurement mode

Press the ESC key then the SIDE-B key of the remote control unit for service to enter Error-Rate Measurement mode. During playback of DVD-VIDEO, Error-Rate Measurement mode can also be entered by pressing the ESC key then the PLAY key.

How to exit Error-Rate Measurement mode

Press the ESC key. The error-rate display disappears, and Error-Rate Measurement mode is exited.

Note: The error rate cannot be measured in VR mode or during CD playback.

Functions

1. While "DVD" is selected(*)

① -1 Video-mode recording (recording medium)

In this mode, DVD recording is automatically performed for 10 seconds, the recorded DVD title is played back while the error rate is being measured, then as soon as playback of the recorded DVD title is finished, playback stops.*1 After error-rate measurement is finished, the average error rate will be displayed on the FL display and OSD. Only in a case in which the calculation of the average error rate fails, the tray will open.

② -2 DVD-VIDEO (playback medium)

Only during playback, when the ESC key then the SIDE-B key (or the ESC key then the PLAY key) are pressed, the error rate is calculated and displayed on the FL display and OSD.(*2) Only in a case in which the calculation of the average error rate fails, the tray will open.

2. While "HDD" is selected(*)

In this mode, HDD recording is automatically performed for 10 seconds. Then HDD- to - DVD- copy is performed.
Then DVD is selected automatically and the copied DVD title is played back while the error rate is being measured, then as soon as playback of the recorded DVD title is finished, playback stops. After the error-rate measurement is finished, the average error rate will be displayed on the FL display and OSD. Only in case in which the calculation of the average error rate fails, the tray will open.

(*) : to change the mode between DVD and HDD, press the HDD/DVD key on the front of the recorder.

■ Changes of display

Table 1: Video mode (recording medium) while "DVD" is selected

Operation	Display	
	FL Display	OSD (On Screen Display)
"ERROR RATE" is displayed on the FL display for an instant.	ERROR RATE	
DVD recording starts.	ERROR RATE	
DVD recording is performed for 10 seconds.	xxxx	
The recorded DVD title is played back while the error rate is being measured, then as soon as playback is finished it stops.	ER x.xE-x	ERR RATE : x.xE-x -
After error-rate measurement is finished (*1), the average error rate, the measurement-finish mark (*), and the OK/NG-judgment result (*3) will be displayed on the FL display and OSD. (If the tray opens as a result of NG judgment, the display on the FL display and OSD will be retained.)	ER x.xE-x	ERR RATE : x.xE-x * OK

Table 2: DVD-Video (playback medium)

Operation	Display	
	FL Display	OSD (On Screen Display)
Only during playback, when the corresponding keys are pressed, the error rate is calculated and displayed on the FL display and OSD. (*2)	ER x.xE-x	ERR RATE : x.xE-x -
After error-rate measurement is finished (*1), the average error rate, the measurement-finish mark (*), and the OK/NG-judgment result (*3) will be displayed on the FL display and OSD. (If the tray opens as a result of NG judgment, the display on the FL display and OSD will be retained.)	ER x.xE-x	ERR RATE : x.xE-x * OK

Table 3: Video mode (recording medium) while "HDD" is selected

Operation	Display	
	FL Display	OSD (On Screen Display)
"ERROR RATE" is displayed on the FL display for an instant.	ERROR RATE	
HDD recording starts.	ERROR RATE	
HDD recording is performed for 10 seconds, then HDD-to-DVD-copy is performed.	xxxx	
The copied DVD title is played back while the error rate is being measured, then as soon as playback is finished it stops.	ER x.xE-x	ERR RATE : x.xE-x -
After error-rate measurement is finished (*1), the average error rate, the measurement-finish mark (*), and the OK/NG-judgment result (*3) will be displayed on the FL display and OSD. (If the tray opens as a result of NG judgment, the display on the FL display and OSD will be retained.)	ER x.xE-x	ERR RATE : x.xE-x * OK

*1 : Whether error-rate measurement is finished or not is judged, as shown in Table 4 below.

Table 4: On judgment whether error-rate measurement is finished or not

Recording Mode	Judgment whether error-rate measurement is finished or not	Recording/playback duration required for error-rate measurement
Video mode	After playback of a certain amount (*) of data Measurement of the 16 ECC blocks is performed 16 times, then the grand sum is used for calculation of the error rate. The capacity is as follows: 16 ECC blocks × 16 sectors × 2048 bytes × 16 times = 8388608 bytes = 67108864 bits	The time required for completion of error-rate measurement varies, depending on the input video signal to be recorded. (The more the motion in the input video signal to be recorded is animated, the shorter the playback time required for completion of error-rate measurement becomes.)

*2 : During DVD-VIDEO error-rate measurement, even after error-rate measurement is finished, playback continues, and the display of the error rate results is retained. In this playback mode, if Error-Rate Measurement mode is exited by pressing the ESC key, then it is reentered by pressing the ESC and SIDE-B keys (or ESC and PLAY keys), the error rate will not be updated, and the previous value is displayed. To reset the previous error rate, stop disc playback.

*3 : OK/NG judgment
In DVD/VIDEO and Video Mode recording, OK/NG judgment is displayed under the following conditions:

Table 5: List of OK/NG threshold values

Disc Type	Recording Mode	Finalized or not finalized	Reference Value	Display
DVD-VIDEO			8.0×10^{-4}	OK / NG
DVD-R	Video mode	Finalized	1.0×10^{-3}	OK / NG
		Not finalized	1.0×10^{-3}	OK / NG
DVD-RW	Video mode	Finalized	1.0×10^{-3}	OK / NG
		Not finalized	1.0×10^{-3}	OK / NG

7.2.4 SETTINGS FOR SPECIFIC AREAS

Purposes: Depending on the area, jitter may appear in a picture received by the tuner, as conditions of signals received by the tuner are different from area to area. To correct this kind of problem, the function of the System Codec AVIO control section for adjusting signals received by the tuner can be used.

How to enter setting modes: To enter General Setting mode, press the ESC key then the CHP/TIM key of the remote control unit for service. To enter Specific Channel Setting mode, press the DIG/ANA key in General Setting mode.

How to exit setting modes: Press the ESC key. The setting mode is exited, the OSD disappears.

1. General Setting mode

This mode can be entered only during recording/playback stop. In this mode, each item and its current settings are displayed on the OSD. The currently selected input mode (TUNER or LINE) is displayed. If L1, L2, L3 or DV is selected for input, general settings for the line input can be made, and if TUNER is selected, general settings for the tuner input can be made.

[General Setting mode] (*2)

```
AVIO Specific Area Mode
Input - [ TUNER ]
Sync AGC        : ON          *
Threshold       : Manual Threshold Level
Threshold Level : 0           *
```

* : setting is the default.

Table 1: Key operations in General Setting mode (effective only during recording/playback stop)

Key	Operation	Setting (*: Default)	Remarks
INPUT SELECT, CHANNEL +/– (+R)	Switches inputs or channels.	–	–
◄ ×3, ×3 ► (*1)	Sets Sync AGC.	ON (+) / OFF	–
⏮ CHAPTER SKIP, CHAPTER SKIP ⏭ (*1)	Sets Threshold.	(+) Normal Auto Threshold Level Manual Threshold Level Pedestal Level	–
◄II STILL STEP, STILL STEP II► (*1)	Sets Threshold level.	According to the setting of Threshold, the values can be changed within the range mentioned below.	–
		• Normal: The value is fixed, with no display of the value.	–
		• Auto Threshold Level: 0-8 (Default: 0)	The value can be changed with the ◄II or II► key.
		• Manual Threshold Level: 0-8 (Default: 0)	The value can be changed with the ◄II or II► key.
		• Pedestal Level: 0-8 (Default: 0)	The value can be changed with the ◄II or II► key.
CLEAR (*1)	Initializes the setting of General Setting mode.	–	Pressing the key resets all settings of General Setting mode to the initial values. Settings of Specific Channel Setting mode are not affected (they are retained).
ESC	Exits AVIO setting for specific areas, clearing the OSD.	–	–

+R: Refers to keys on the remote control unit supplied with this unit. The keys without "R" refer to the remote control unit for service.

*1 : When a setting value is changed, that value is immediately displayed and is stored in nonvolatile memory.
• Settings made will not be reset to the default settings even if resetting to the factory-preset values is performed.

*2 : In General Setting mode, if the channel displayed has specific settings, the following will be displayed.

[Display in General Setting mode when the channel currently displayed has specific settings]

```
AVIO Specific Area Mode
Input - [ TUNER ]
Sync AGC        : ON          *
Threshold       : Manual Threshold Level
Threshold Level : 0           *

    This channel is set up
    individually.
```

2. Specific Channel Setting mode

This mode is entered when the DIG/ANA key is pressed in General Setting mode. In this mode, specific settings can be made for up to 12 channels. For channels that do not have specific settings, the settings of General Setting mode are applied.
Display in Specific Channel Setting mode (A picture from the tuner can be viewed using the semitransparent OSD display.)

[Display in Specific Channel Setting mode]

[When specific channel settings have NOT been made]

```
AVIO Specific Area Mode
Input - [ TUNER ]
Sync AGC        : ON          *
Threshold       : Manual Threshold Level
Threshold Level : 0           *
Individual setting state
Input Channel - [    1CH]
Sync AGC        : ---
Threshold       : ------
Threshold Level : --h
```

General Setting data

Specific Channel Setting data

[When specific channel settings have been made]

```
AVIO Specific Area Mode
Input - [ TUNER ]
Sync AGC        : ON          *
Threshold       : Manual Threshold Level
Threshold Level : 2
Individual setting state
Input Channel - [    1CH]
Sync AGC        : ON
Threshold       : Manual Threshhold Level
Threshold Level : 3
```

* : setting is the default.

- If a channel that does not have specific settings is displayed, the setting figures are displayed as hyphens (--).
  If the setting figures are not displayed as hyphens, those settings have been specifically set even if they are identical to the default settings or those of General Setting mode.
- The channels to be displayed in "Input Channel" are as follows:
  - In a case of line input: L1-L3, DV
  - In a case of tuner input: Received channel (a channel to be set in specific channel settings)

Table 2: Key operations in Specific Channel Setting mode
(effective only during recording/playback stop)

Key	Operation	Setting (+: Default)	Remarks
DIG/ANA	Switches cyclically between General Setting mode and Specific Channel Setting mode.	–	–
INPUT SELECT, CHANNEL +/– (+R)	Switches inputs or channels.	–	–
◄ x3, x3 ► (+1)	Sets Sync AGC.	ON (+) / OFF	–
I◄◄ CHAPTER SKIP, CHAPTER SKIP ►►I	Sets Threshold.	(+) Normal Auto Threshold Level Manual Threshold Level Pedestal Level	–
◄II STILL STEP, STILL STEP II►	Sets Threshold level.	According to the setting of Threshold, the values can be changed within the range mentioned below.	–
		• Normal: The value is fixed, with no display of the value.	–
		• Auto Threshold Level: 0-8 (Default: 0)	The value can be changed with the ◄II or II► key.
		• Manual Threshold Level: 0-8 (Default: 0)	The value can be changed with the ◄II or II► key.
		• Pedestal Level: 0-8 (Default: 0)	The value can be changed with the ◄II or II► key.
PLAY	All channels assigned to have specific settings are canceled, and the specific settings are reset to their default values.	–	Settings of General Setting mode are not affected.
CLEAR	If the channel currently selected is assigned to have specific settings, that assignment is canceled. (If that channel is canceled, the number of remaining channels for which specific channel settings can be made increases by 1.)	–	Pressing the key resets the settings of Specific Channel Setting mode for that channel to the initial values. Settings of General Setting mode are not affected.
PAUSE	The specific-setting data for the currently selected channel are reset to their default values. (But the assignment of a channel having specific settings is not canceled.)	–	Pressing the key resets the settings of Specific Channel Setting mode for that channel to the initial values. Settings of General Setting mode are not affected (retained).
ESC	Exits AVIO setting for specific areas, clearing the OSD.	–	–

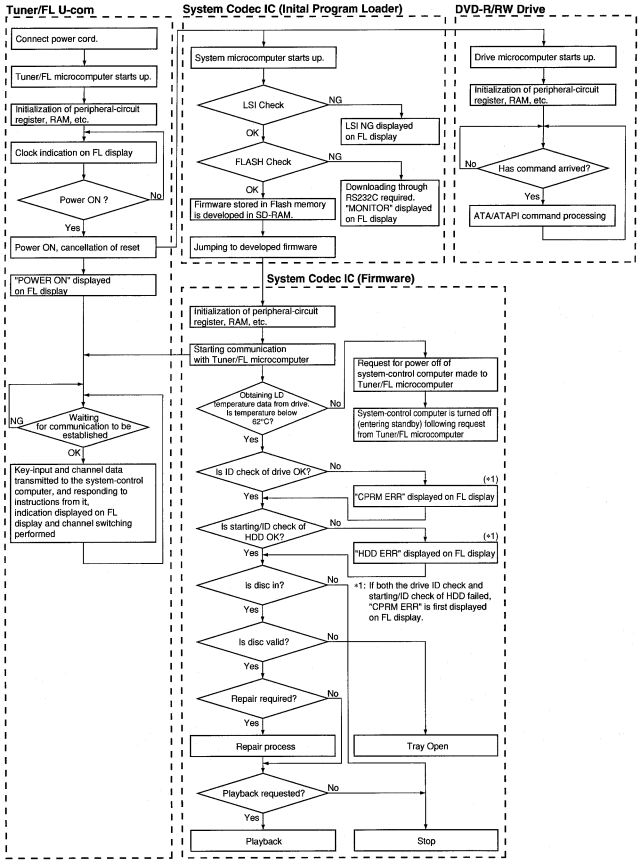
*R: Refers to keys on the remote control unit supplied with this unit. The keys without "R" refer to the remote control unit for service.

- Settings made will not be reset to the default settings even if resetting to the factory-preset values is performed.
- Screen display when Specific Channel settings are made on 12 (maximum) channels: In such a case, if a channel which does not have specific settings is selected, the individual setting state for that channel is not displayed, as shown in the figure below, and the settings cannot be modified. In such a case, if you wish to make Specific Channel Settings for the currently selected channel, you must clear the Specific Channel Settings for one or more channels beforehand.

[With 12 channels having specific settings, when the currently selected channel does not have specific settings]

```
AVIO Specific Area Mode
Input - [ TUNER ]
Sync AGC        : ON          *
Threshold       : Manual Threshold Level
Threshold Level : 3
Individual setting state
  Sorry !
You can store only 12 channels
for Specific Area mode.
```

7.2.5 SETUP SEQUENCE

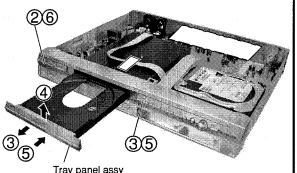


7.2.6 DISASSEMBLY

Note : When remove the HDD and diagnose it, order the ATAB Assy (VWV1968) and a flexible cable (40P) (VDA1977) using for connection of DRIVE Assy R6. And use it as cable extension.

1 Bonnet S, Tray Panel Assy

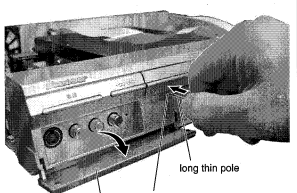
① Remove the bonnet by removing the eight screws.
② Press the ⏻ STANDBY/ON button to turn on the power.
③ Press the ⏏ button to open the tray.
④ Remove the tray panel assy.
⑤ Press the ⏏ button to close the tray.
⑥ Press the ⏻ STANDBY/ON button to turn off the power.



Tray panel assy

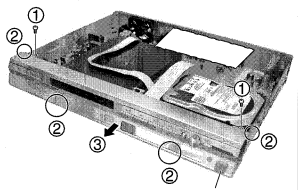
● How to open the tray when the power cannot be on

When the player cannot eject disc tray due to power failure or any other reasons, open the jack door, and use a long thin pole and push the emergency eject hole under the tray panel to eject.



2 Front Panel Section

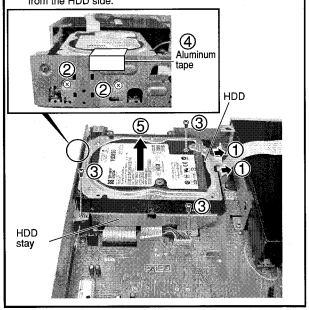
① Remove the two screws.
② Remove the four hooks.
③ Remove the front panel section.



Front panel section

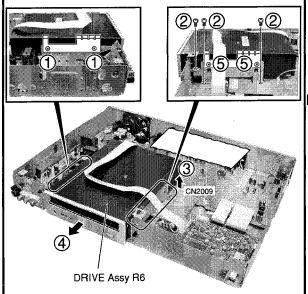
3 HDD

① Disconnect the two connectors.
② Remove the two screws.
③ Remove the three screws.
④ Remove the aluminum tape from the HDD side.
⑤ Remove the HDD with HDD stay.



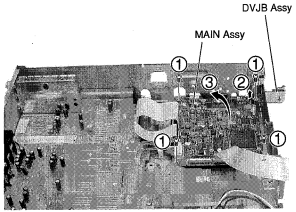
4 DRIVE Assy R6

① Remove the two screws.
② Remove the three screws.
③ Disconnect the connector.
④ Remove the DRIVE Assy R6.
⑤ Remove the two screws.



5 MAIN Assy

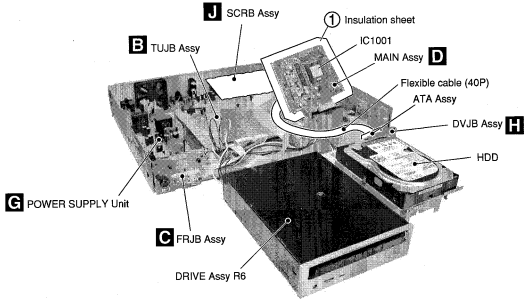
① Remove the four screws.
② Disconnect the flexible cable from DVJB Assy.
③ Stand the MAIN Assy.



6 Diagnosis

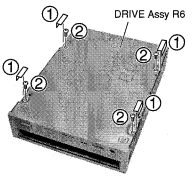
① Insert the insulation sheet between the MAIN Assy and chassis.
② Arrange the unit as shown in the photo below.

Caution: MAIN IC (IC1001) on the MAIN Assy generate heat to around 80 degrees. Be careful when works.

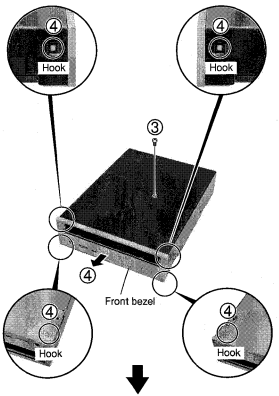


7 DRIVE Assy R6 (DVD-R/RW WRITER)

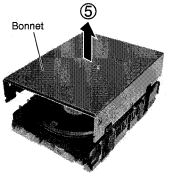
① Remove the four aluminium tape.
② Remove the four screws.



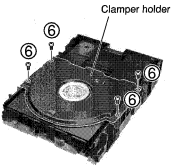
③ Remove the one screw.
④ Remove the front bezel by removing the four hooks.



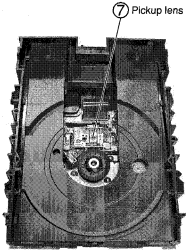
⑤ Remove the bonnet.



⑥ Remove the clamper holder by removing the four screws.



⑦ Clean the pickup lens.



7.3 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

● **List of IC**

PD5947A8, RS5C372A, LC75342M, AK5381VT, PST3428U, PST3809U, NJM2880U1-33, M65672WG-C, UPD72852AGB-8EU, UPD72893AGD-LML, TDA9818TS, LA73026AV

■ PD5947A8 (TUJB ASSY : IC2001)

• TUFL Microcomputer

● **Pin Function**

No.	Pin Name	Signal Name	I/O	Function	Active
1	P95/ANEX0/CLK4	FLCLK	O	FL Driver communication line CLK	–
2	P94/DA1/TB4in	SYNC	I	C-Sync of input video	↑
3	P93/DA0/TB3in	AVLINKIN	I	Input line of NexTViewLink	–
4	P92/TB2in/Sout3	IR	I	Pulse input of remote control	–
5	P91/TB1in/Sin3	J_CLOCK	I		
6	P90/TB0in/CLK3	SYNCAFT	I	C-Sync of input video	↑
7	BYTE	BYTE	I		
8	CNVss	PGM	I	Communication line	
9	P87/XCin	NC	(O)		–
10	P86/XCout	NC	(O)		–
11	-RESET	XRESETIN	I	u-Con Reset	
12	Xout	XOUT	I		
13	Vss	GND	–		
14	Xin	XIN	I		
15	Vcc	VCC	–		
16	P85/-NMI	NMI	I		↓
17	P84/-INT2	JOGA	I	Phase VOL input	↑↓
18	P83/-INT1	SLICEONFB	I	Feedback from SLICEON pin	↑?
19	P82/-INT0	XINTRA	I	Alarm/interval interruption	↓
20	P81/TA4in	NC	(O)		–
21	P80/TA4out	NC	(O)		–
22	P77/TA3in	NC	(O)		–
23	P76/TA3out	FANPWM	O	FAN power control	H
24	P75/TA2in	JOGB	I	Phase VOL input	↑↓
25	P74/TA2out	NC	(O)		–
26	P73/-CTS2/-RTS2/TA1in	IICRST	O	Reset output to I2C microcomputer	L
27	P72/CLK2/TA1out	AVLINKOUT	O	Output line of NextViewLink	H
28	P71/RxD2/SCL/TA0in/TB5in	SCL	I/O	I2C communication (clock)	–
29	P70/TxD2/SDA/TA0out	SDA	I/O	I2C communication (data)	–
30	Vss2	GND	–		
31	LP2	LP2	O		
32	LP3	LP3	O		
33	LP4	LP4	O		
34	Vdd2	VDD2	–		
35	M2	M2	I	Mode switch	
36	M1	M1	I		
37	P11/SLICEON	SLICEON	O	Slicer operating signal	H?
38	P67/TxD1	TXD	O	Communication line for firmware download/monitor	–
39	P66/RxD1	RXD	I	Communication line for firmware download/monitor	–
40	P65/CLK1	SCLK	(O)	Communication line for firmware download/monitor	–

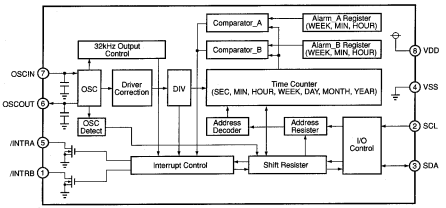
No.	Pin Name	Signal Name	I/O	Function	Active
41	P64/-CTS1/-RTS1/CLKS1	BUSY	O	Communication line for firmware download/monitor	–
42	P63/TxD0	SSTTOM	O	SYS controller communication line (Tuner → Main)	–
43	P62/RxD0	SSMTOT	I	SYS controller communication line (Main → Tuner)	–
44	P61/CLK0	SCK	I	SYS controller communication line (clock)	↑
45	P60/-CTS0/-RTS0	HSTTOM	O	Tuner → SYS handshake	L
46	P57/-RDY/CLKout	DLCONT	O	Voltage supply SW of FLASH-ROM writing	L
47	P56/ALE	WRT	O	Write signal	H
48	P55/-HOLD	SDAEEP	I/O	SDA line for EEPROM	–
49	P54/-HLDA	SCLEEP	O	SCL line for EEPROM	–
50	P53/BCLK	VOLCE	O	Communication line CE	H
51	P52/-RD	VOLDATA	O	Communication line DATA	–
52	P51/-WRH/-BHE	VOLCLK	O	Communication line CLK	–
53	P50/-WRL/-WR	DLCE	I	Signal for serial I/O mode selection	–
54	P47/-CS3	S1	O		
55	P46/-CS2	LET	O	Letterbox signal add	H
56	P45/-CS1	SQU	O	Squeeze signal add	–
57	P44/-CS0	BLANK	I	BLANK signal input	–
58	P43/A19	XTHROU	O	Through control of SCART1/2	L
59	P42/A18	NC	(O)		–
60	P41/A17	SEL1	O	Parallel control (for audio switch)	–
61	P40/A16	SWVION	O	Independent source SW for video I/O output circuit	H
62	P37/A15	SWSTBY	O	Standby mode of video input selector	H
63	P36/A14	BS15ON	O		
64	P35/A13	BS15SRT	I		
65	P34/A12	SCTHRU	O	SCART loop through control during power OFF	L
66	P33/A11	BS15IN	I		
67	P32/A10	SDET3	I	S terminal detection of Video input 3	L
68	P31/A9	SDET2	I	S terminal detection of Video input 2	L
69	Vcc	VCC	–		
70	P30/A8	SDET1	I	S terminal detection of Video input 1	L
71	Vss	GND	–		
72	P27/A7	SELV1	O	Parallel control	–
73	P26/A6	SELV2	O	Parallel control	–
74	P25/A5	SELV3	O	Parallel control	–
75	P24/A4	YVSEL	O	CVBS/YC switch of Video input selector	–
76	P23/A3	P_SAVEBS	O	RF through output switch	H
77	P22/A2	FOMO	O		–
78	P21/A1	M1ONTA	O		–
79	P20/A0	P_CONT	O	System Power ON	H
80	P17/D15/-INT5	NC	(O)		–

No.	Pin Name	Signal Name	I/O	Function	Active
81	P16/D14/-INT4	HSMTOT	I	SYS → Tuner handshake	↓
82	P15/D13/-INT3	DCTRI	I	Change detection of audio condition	↑
83	P14/D12	MUTE	O	MUTE control	H
84	P13/D11	SU/SAPID	I		
85	P12/D10	ST/STID	I		
86	P11/D9	XRESET	O	System Reset output	L
87	P10/D8	LDASH	O	ColorSystem distinction signal	H
88	P07/D7	STBYQ	O	EU multiplex decoder standby mode	L
89	P06/D6	LM/	O	ColorSystem distinction signal	H
90	P05/D5	I/BG	O	ColorSystem distinction signal	H
91	P04/D4	XP_SAVE	O	Power save control (SCART)	L
92	P03/D3	TUON	O	Tuner power	H
93	P02/D2	YCSW	O		
94	P01/D1	RSTCTL	O	Reset signal mask from the system controller	L
95	P00/D0	FLPON	O	FL Driver Power ON	H
96	P107/AN7/-KI3	MODEL1	A/D IN	Input for destination judgment	–
97	P106/AN6/-KI2	MODEL2	A/D IN	Input for destination judgment	–
98	P105/AN5/-KI1	AGC	A/D IN	Field intensity detection	–
99	P104/AN4/-KI0	FUNC	A/D IN	Function signal input	–
100	P103/AN3	KEY2	A/D IN	Main unit key input	–
101	P102/AN2	KEY1	A/D IN	Main unit key input	–
102	P101/AN1	C/N	A/D IN		–
103	Avss	GND	–		
104	P100/AN0	AFT	A/D IN	AFT voltage input	–
105	VREF	VREF	–		
106	AVcc	AVCC	–		
107	P97/-ADTRG/Sin4	FLSTB	O	Communication line strobe of FL driver	L
108	Vdd1	VDD1	–		
109	SYNCIN	SYNCTEXT	I	Video input for sync. sep.	
110	SVREF	SLICE	I	Slice level input	
111	Vss1	GND	–		
112	Vdd3	VDD3	–		
113	CVIN1	CVIN1	I	Video input for teletext	
114	Vss3	GND	–		
115	FSCIN	FSCIN	I	Fsc input	
116	P96/ANEX1/Sout4	FLDATA	O	Communication line data of FL driver	–

■ RS5C372A (TUJB ASSY : IC2271)

• Real Time Clock IC

● Block Diagram



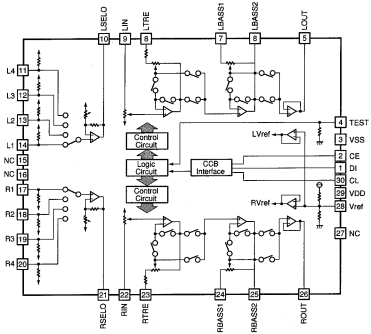
● Pin Function

No.	Pin Name	I/O	Function	
1	/INTRB	O	Interruption output B The output of 32.768kHz (in 32768Hz crystal use), cycled interrupt for CPU, or output alarm interrupt (ALARM_B). This pin output 32.768kHz when activated power from 0V. Nch open drain output.	
2	SCL	I	Shift clock input Synchronize with this clock, and input and output data from a SDA terminal. Exceed VDD, and can input to 6V.	
3	SDA	I/O	Serial input and output Synchronize with SCL, and input and output writing data or readout data. Exceed VDD, and can input to 6V. Nch open drain output in the output.	
4	VSS	–	Ground pin	
5	/INTRA	O	Interruption output A Cycled interrupt for CPU, or output alarm interruption (ALARM_A, ALARM_B). This pin becomes an OFF state when activated power from 0V. N ch open drain output.	
6	OSCOUT	O	Oscillation circuit output	Connect a crystal resonator of 32.768kHz or 32.000kHz between OSCIN and OSCOUT, and constitute oscillation circuit. (component parts of oscillation circuit except crystal resonator have it built-in.)
7	OSCIN	I	Oscillation circuit input	
8	VDD	–	Positive supply input	

■ LC75342M (TUJB ASSY : IC2801)

• Electric Volume IC

● Block Diagram



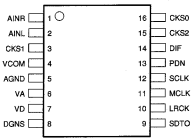
● Pin Function

No.	Pin Name	Function	No.	Pin Name	Function
1	DI	Serial data input for control	16	NC	Not connected
2	CE	Chip enable pin Data are written in the internal latch by a timing of "H" → "L", and each analog switch works. Data transfer is enabled by "H" level.	17	R1	Input signal pin
3	VSS	Ground pin	18	R2	
4	TEST	Pin for electronic volume test Set to VSS electric potential.	19	R3	
5	LOUT	Volume and equalizer output pin	20	R4	
6	LBASS2	Capacitor and resistor connection pins for bus bandpass filter	21	RSELO	Input selector output pin
7	LBASS1		22	RIN	Volume and equalizer input pin
8	LTRE	Capacitor connection pin for treble bandpass filter	23	RTRE	Capacitor connection pin for treble bandpass filter
9	LIN	Volume and equalizer input pin	24	RBASS1	Capacitor and resistor connection pins for bus bandpass filter
10	LSELO	Input selector output pin	25	RBASS2	
11	L4	Input signal pins	26	ROUT	Volume and equalizer output pin
12	L3		27	NC	Not connected
13	L2		28	Vref	0.5XVDD voltage generation block
14	L1		29	VDD	Power supply pin
15	NC	Not connected	30	CL	Clock input pin for control

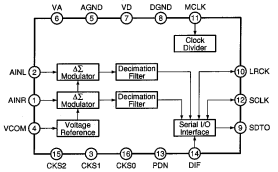
■ AK5381VT (MAIN ASSY : IC3101)

• 96kHz 24 bit ΔΣ ADC

● Pin Arrangement (Top view)



● Block Diagram



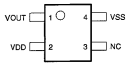
● Pin Function

No.	Pin Name	I/O	Function
1	AINR	I	R ch analog input
2	AINL	I	L ch analog input
3	CKS1	I	Mode select 1
4	VCOM	O	Common voltage output, bias voltage of VA/2 and ADC input
5	AGND	–	Analog ground
6	VA	–	Analog power supply, 4.5V to 5.5V
7	VD	–	Digital power supply, 2.7 to 5.5V (fs = 4k to 48kHz), 3.0 to 5.5V (fs = 48k to 96kHz)
8	DGND	–	Digital ground
9	SDTO	O	Audio serial data output, outputs "L" in the power down mode.
10	LRCK	I/O	Channel clock I/O, outputs "L" by master mode in the power down mode.
11	MCLK	I	Master clock input
12	SCLK	I/O	Audio serial data clock, outputs "L" by master mode in the power down mode.
13	PDN	I	Power down mode "H": power up, "L": power down
14	DIF	I	Audio interface format, "H" : 24 bit I2S compatibility, "L" : 24 bit MSB justify
15	CKS2	I	Mode select 2
16	CKS0	I	Mode select 0

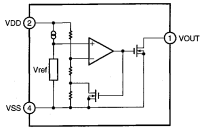
■ PST3428U (MAIN ASSY : IC4003)

• Reset IC

● Pin Arrangement (Top view)



● Block Diagram



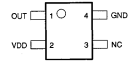
● Pin Function

No.	Pin Name	Function
1	VOUT	Reset signal output
2	VDD	Power supply / voltage detection
3	NC	Not connected
4	VSS	VSS

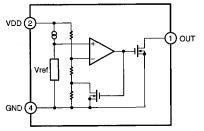
■ PST3809U (MAIN ASSY : IC4005)

• Reset IC

● Pin Arrangement (Top view)



● Block Diagram



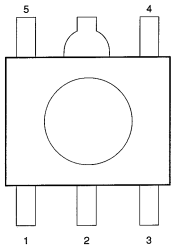
● Pin Function

No.	Pin Name	Function
1	OUT	Reset signal output
2	VDD	Power supply / voltage detection
3	NC	Not connected
4	GND	Ground

■ NJM2880U1-33 (MAIN ASSY : IC4007)

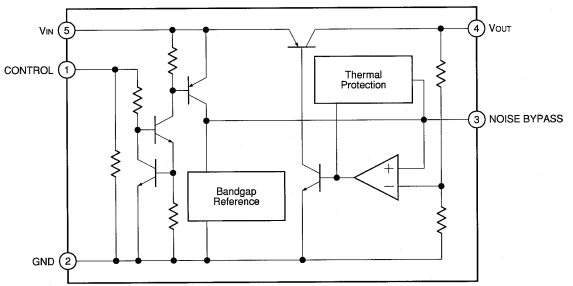
• Regulator IC

● Pin Arrangement (Top view)



1 : CONTROL (Active High)
2 : GND
3 : NOISE BYPASS
4 : VOUT
5 : VIN

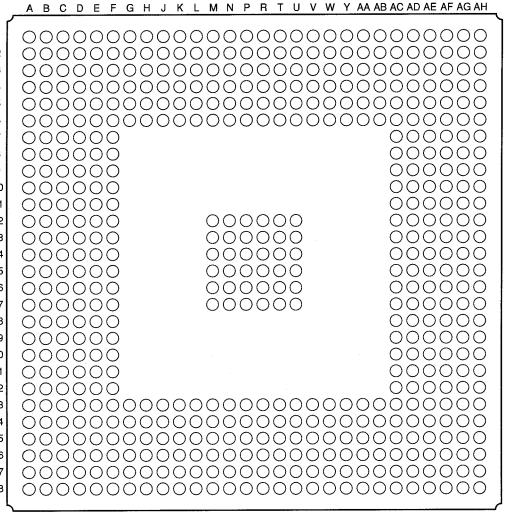
● Block Diagram



■ M65672WG-C (MAIN ASSY : IC1001)

• Signal Processing IC for DVD Recorder

● Pin Arrangement (Top view)

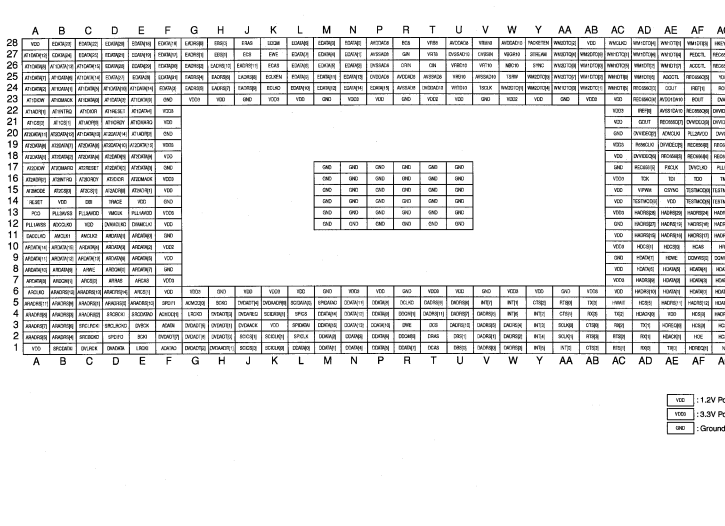


● I/O buffer list

Buffer Name	Main Function	Remarks
PDIDGZ	Input buffer (5V tolerant)	
PDUDGZ	Input buffer (5V tolerant), pull-up	
PDDDGZ	Input buffer (5V tolerant), pull-down	
PDO04CDG	Output buffer, 4mA	
PDO08CDG	Output buffer, 8mA	
PDO0204DGZ	Output buffer, 2/4mA	
PDO0406DSGZ	Output buffer, 4/6mA	For SDRAM IF
PDO0406DSGZx2	Output buffer, 8/12mA	For SDRAM IF
PDT0204DGZ	3 state output buffer, 2/4mA	
PDB04DGZ	Bidirectional buffer, 4mA	
PDB08DGZ	Bidirectional buffer, 8mA	
PDB0204DGZ	Bidirectional buffer, 2/4mA	
PDB0406DSGZ	Bidirectional buffer, 4/6mA	For SDRAM IF

● Pin Name list

DVR-S100RS



	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	U	V	W	Y	AA	AB	AC	AD	AE	AF	AG	AH	
28	VDD	EDATA[24]	EDATA[23]	EDATA[22]	EDATA[21]	EDATA[20]	EADR[14]	EADR[8]	EWE	EOE	EADR[9]	EDATA[0]	EDATA[2]	ATCDATA	RCS	VRB5	AVCDATA	VRB4	AVSDATA[3]	TADVETTEN	WM2DTD[2]	VDD	WM2UA[2]	WM1DT[28]	WM1DT[29]	WM1DT[30]	WM1DT[31]	VDD	28
27	ATCDATA[15]	EDATA[25]	EDATA[27]	EDATA[26]	EDATA[28]	EDATA[29]	EADR[15]	EDI[0]	EDI	EWE	EDATA[1]	EDATA[3]	EDATA[4]	AVSDATA	GIN	VRT5	DVSDATA[13]	CVBS5N	VDGA[3]	2SWLAM	WM2DTD[0]	WM2DTD[1]	WM1DT[24]	WM1DT[25]	WM1DT[26]	WM1DT[27]	RECDATA[15]	RECDATA[8]	27
26	ATCDATA[9]	ATCDATA[8]	ATCDATA[14]	ATCDATA[13]	EDATA[25]	EDATA[24]	EADR[16]	EADR[9]	EADR[10]	EADR[11]	EDATA[5]	EDATA[6]	EDATA[7]	EDATA[8]	EDATA[9]	DVSDATA	AVDDATA	AVSDATA	VRB3	AVSSA240	TSYNP	WM2DTD[29]	WM2DTD[31]	WM1DT[20]	WM1DT[21]	WM1DT[22]	WM1DT[23]	RECDATA[2]	YDLT	AVSSDAM	26
25	ATCDATA[2]	ATCDATA[1]	ATCDATA[7]	ATCDATA[6]	ATCDATA[12]	ATCDATA[11]	EADR[12]	EADR[13]	EADR[5]	EDLHD	EDATA[30]	EDATA[31]	EDATA[10]	EDATA[11]	EDATA[12]	DVSDATA	AVDDATA	AVSSA24	VRB2	AVSSA240	TSYNP	WM2DTD[28]	WM2DTD[30]	WM1DT[16]	WM1DT[17]	WM1DT[18]	WM1DT[19]	RECDATA[3]	CDLT	AVSSDAM	25
24	ATCDATA[3]	ATCDATA[4]	ATCDATA[5]	ATCDATA[10]	ATCDATA[17]	ATCDATA[16]	EDATA[24]	EADR[11]	EADR[7]	EDLHD	EDATA[26]	EDATA[27]	EDATA[28]	EDATA[29]	AVSSA24	DVSDA3V3	VRT3V3	TSCLK	WM2DTD[26]	WM2DTD[27]	WM2DTD[24]	WM2DTD[25]	WM1DT[12]	WM1DT[13]	WM1DT[14]	WM1DT[15]	RECDATA[0]	CDLT	WDT[1]	RCLT	AVSDDAM	24
23	ATCDATA[0]	ATCDATA[18]	ATCDATA[19]	AVSDATA[0]	AVSDATA[1]	AVSDATA[2]	ATCDATA[20]	ATCDATA[21]	EDATA[23]	VDD3	VDD	GND	VDD3	VDD	GND	VDD3	VDD	GND	VDD3	VDD	GND	VDD3	VDD	RECDATA[4]	AVDDA1V8	RCLT	DVACK	DFRE[3]	23
22	ATCDATA[1]	ATCDATA[3]	ATCDATA[2]	ATCDATA[4]	ATCDATA[15]	ATCDATA[14]	VDD3															VDD3	RFE[3]	AVSDA1V8	RECDATA[5]	DVRDEC[3]	DVRDEC[1]	22
21	ATCDATA[22]	ATCDATA[21]	ATCDATA[23]	ATCDATA[24]	AVSDATA[3]	AVSDATA[4]	VSS															VSS	DSTAT	RECDATA[7]	DVRDEC[2]	DVRDEC[0]	PLLAVSS	21
20	ADDATA[0]	ADDATA[1]	ADDATA[2]	ADDATA[3]	AVSDATA[5]	AVSDATA[6]	GND															GND	DVRDEC[5]	ADVCLK	PLLAVDD	DVRCLK	DVRDEC[7]	20
19	ADDATA[4]	ADDATA[5]	ADDATA[6]	ADDATA[7]	AVSDATA[7]	AVSDATA[8]	VSS															VSS	PWMCLK	DVRDEC[6]	RECDATA[6]	RECDATA[4]	RECDATA[9]	19
18	ADDATA[8]	ADDATA[9]	ADDATA[10]	ADDATA[11]	ATCDATA[25]	ATCDATA[26]	VDD															VDD	DVRDEC[4]	RECDATA[8]	RECDATA[10]	RECDATA[11]	RECDATA[12]	18
17	ADDATA[12]	ADDATA[13]	ADDATA[14]	ADDATA[15]	ATCDATA[27]	ATCDATA[28]	GND															GND	RCDA[0]	PWCLK	DVRCLK0	PLLVDD	TRST	17
16	ADDATA[16]	ADDATA[17]	ADDATA[18]	ADDATA[19]	ATCDATA[29]	ATCDATA[30]	VDD3															VDD3	TDK	TDI	TDO	TMS	PLLOW	16
15	ADDATA[20]	ADDATA[21]	ADDATA[22]	ADDATA[23]	ATCDATA[31]	ATCDATA[32]	VDD															VDD	VPWM	CSYNC	TESTMODE[0]	TESTMODE[1]	TESTMODE[2]	15
14	RESET	VDD	DIR	WACE	VDD	EDI																VDD	TESTMODE[3]	VDD	TESTMODE[4]	TESTMODE[5]	TESTMODE[6]	14
13	PCD	PLLAVSS	PLLAVDD	AMCLK	PLLVAVDD	VDD5																VDD3	HADR[28]	HADR[29]	HADR[30]	HADR[31]	HADR[0]	13
12	PLLVAVSS	ADCCLKO	VDD	DAMUTE[4]	DAMUTE[3]	VDD																GND	HADR[27]	HADR[26]	HADR[25]	HADR[24]	HADR[23]	12
11	DADCLKC	AMCLK1	AMCLK2	ADDATA[0]	ADDATA[1]	GND																VDD	HADR[22]	HADR[21]	HADR[20]	HADR[19]	HADR[18]	11
10	ADDATA[14]	ADDATA[12]	ADDATA[8]	ADDATA[5]	ADDATA[3]	VDD5																VDD3	HDCS[1]	HDCS[2]	HCAS	HRAS	HCADR	10
9	ADDATA[11]	ADDATA[10]	ADDATA[9]	ADDATA[6]	ADDATA[4]	GND																GND	HDATA[1]	HDWE	DDMY[02]	DDMY[01]	HCLKO	9
8	ADDATA[13]	ADDATA[6]	AHRC	AVSCK[2]	AVSATA[7]	GND																VDD	HDATA[3]	HDATA[0]	HDATA[4]	HDATA[5]	HDATA[6]	8
7	ADDATA[15]	ADDATA[7]	ADCDS	AHRAE	AHCAS	VDD3																VDD	HADR[26]	HDATA[2]	HDATA[7]	HDATA[11]	HDATA[10]	7
6	ADCLKO	ADADTA[23]	ADADTA[18]	ADADTA[16]	ADADTA[14]	ADCS[1]	VDD3	DAO	VDD	VCO3	VDD	GND	VDD3	VDD	GND	VDD3	VDD	GND	VDD3	VDD	GND	VDD3	VDD	HADR[24]	HDATA[1]	HDATA[8]	HDATA[9]	HDATA[12]	6
5	ADADTA[21]	ADADTA[19]	ADADTA[20]	ADADTA[17]	ADADTA[15]	SPDIFI	ACMCSDE	SCK0	DVDATF[6]	DVDAVDF[6]	SCGSAVSS	SPDDAVC	DDATA[11]	DDATA[9]	DCLKO	DADR[01]	DADR[08]	INT[1]	INT[4]	CTS[2]	RTS[2]	HWAIT	HCS[1]	HADR[2]	HDATA[15]	HDATA[13]	HDATA[14]	5
4	ADADTA[8]	ADADTA[9]	ADADTA[22]	ERSCK[1]	SRDDAND	ACHCDE[1]	LRCKO	DVDATE[2]	DVDATE[3]	SCGDRVSS	SPDCS	DDATA[24]	DDATA[12]	DDATA[8]	DSCK[01]	DADR[07]	DADR[02]	INT[3]	INT[1]	CTS[1]	RTS[3]	TXD2	HDADR[2]	HCS0	HCS[2]	HADR[29]	HADR[28]	HADR[15]	4
3	ADADTA[7]	ADADTA[6]	SRCLRCK4	SRCLRCK3	DVSCK	ACHCK	DVDATE[1]	DVDATF[1]	DVDAVCE	VDD	SPDEDAM	DDATA[23]	DDATA[13]	DDATA[14]	DWE	DCS	DADR[03]	DADR[05]	DADR[04]	INT[2]	SCLK[2]	CTS[3]	RXD2	TXD1	HCKE[0]	HCS[0]	HCS[3]	HADR[25]	3
2	ADADTA[5]	ADADTA[4]	SRDCBCK3	SRDCBCK2	SPDSYC	DCK	DVDATE[0]	DVDATE[4]	DVDATF[0]	SCGCSE[1]	SCGCLK[1]	SPDCLK	DDATA[25]	DDATA[15]	DDAB3	DRAS	DADR[11]	DADR[06]	INT[4]	SCLK[1]	RTS[0]	RXD[0]	TXD[0]	HDADR[3]	HCE	HCS[1]	HCS[1]	HCS[1]	2
1	VSS	SRDSDATA	DVLRCK	DVLRCK	LRCKI	ADCLKI	DVDATE[5]	DVDATF[7]	SCGCSE[2]	SCGCLK[2]	SCGRSE	DDATA[31]	DDATA[30]	DDATA[16]	DDATA[7]	DCAS	DWE[0]	DADR[09]	INT[0]	INT[5]	CTS[0]	RTS[1]	RXD[1]	TXD[1]	HDWE[2]	HCE	HCS[2]	NC	NC	1

	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	U	V	W	Y	AA	AB	AC	AD	AE	AF	AG	AH	

VDD	: 1.2V Power supply
VDD3	: 3.3V Power supply
GND	: Ground

● Pin Function

No.	BALL Address	Pin Name	I/O	Function	No.	BALL Address	Pin Name	I/O	Function
1	VDD3	VDD3	–	3.3V I/O power supply	56	V26	VRT10	–	VIDEO-Analog
2	GND	GND	–	Ground	57	V28	VRM10	–	VIDEO-Analog
3	VDD	VDD	–	1.2V LOGIC power supply	58	U25	VRB10	–	VIDEO-Analog
4	AH28	VDD	–	1.2V LOGIC power supply	59	U26	VRBD10	–	VIDEO-Analog
5	AF26	ACCCTL	O		60	U27	DVSSAD10	–	
6	AF27	PEDCTL	O	VIDEO-Analog, Output buffer	61	T24	DVDDAD10	–	
7	AG28	HKEYPLS	O	VIDEO-Analog, Output buffer	62	GND	GND	–	Ground
8	GND	GND	–	Ground	63	VDD	VDD	–	1.2V LOGIC power supply
9	AE26	WM1DTI[7]	I/O	WM/VWM, Bidirectional buffer	64	U28	AVDDAD8	–	
10	AD25	WM1DTI[6]	I/O	WM/VWM, Bidirectional buffer	65	T25	AVSSAD8	–	
11	AC24	WM1DTI[5]	I/O	WM/VWM, Bidirectional buffer	66	T26	CIN	I	VIDEO-Analog
12	AE27	WM1DTI[4]	I/O	WM/VWM, Bidirectional buffer	67	T27	VRT8	–	VIDEO-Analog
13	AF28	WM1DTI[3]	I/O	WM/VWM, Bidirectional buffer	68	T28	VRB8	–	VIDEO-Analog
14	AD26	WM1DTI[2]	I/O	WM/VWM, Bidirectional buffer	69	R25	AVDDAD8	–	
15	AE28	WM1DTI[1]	I/O	WM/VWM, Bidirectional buffer	70	R24	AVSSAD8	–	
16	AC25	WM1DTI[0]	I/O	WM/VWM, Bidirectional buffer	71	R26	CRIN	I	VIDEO-Analog
17	AB24	WM1DTO[7]	I/O	WM/VWM, Bidirectional buffer	72	R28	BG8	–	VIDEO-Analog
18	VDD	VDD	–	1.2V LOGIC power supply	73	P28	AVDDAD8	–	
19	GND	GND	–	Ground	74	P27	AVSSAD8	–	
20	AD27	WM1DTO[6]	I/O	WM/VWM, Bidirectional buffer	75	R27	GIN	I	VIDEO-Analog
21	AC26	WM1DTO[5]	I/O	WM/VWM, Bidirectional buffer	76	P26	DVSSAD8	–	
22	AD28	WM1DTO[4]	I/O	WM/VWM, Bidirectional buffer	77	P25	DVDDAD8	–	
23	AA24	WM1DTO[3]	I/O	WM/VWM, Bidirectional buffer	78	GND	GND	–	Ground
24	AB25	WM1DTO[2]	I/O	WM/VWM, Bidirectional buffer	79	P24	EDATA[15]	I/O	SDRAM ENC, Bidirectional buffer
25	VDD	VDD	–	1.2V LOGIC power supply	80	VDD3	VDD3	–	3.3V I/O power supply
26	AC27	WM1DTO[1]	I/O	WM/VWM, Bidirectional buffer	81	N28	EDATA[0]	I/O	SDRAM ENC, Bidirectional buffer
27	GND	GND	–	Ground	82	N27	EDATA[1]	I/O	SDRAM ENC, Bidirectional buffer
28	AC28	WMCLKO	O	WM/VWM, Output buffer	83	N26	EDATA[2]	I/O	SDRAM ENC, Bidirectional buffer
29	VDD3	VDD3	–	3.3V I/O power supply	84	VDD	VDD	–	1.2V LOGIC power supply
30	AB26	WM1DTO[0]	I/O	WM/VWM, Bidirectional buffer	85	N25	EDATA[13]	I/O	SDRAM ENC, Bidirectional buffer
31	AA25	WM2DTO[7]	O	WM/VWM, Output buffer	86	GND	GND	–	Ground
32	AB27	WM2DTO[6]	O	WM/VWM, Output buffer	87	M28	EDATA[3]	I/O	SDRAM ENC, Bidirectional buffer
33	AB28	VDD	–	1.2V LOGIC power supply	88	GND	GND	–	Ground
34	Y24	WM2DTO[5]	O	WM/VWM, Output buffer	89	N24	EDATA[14]	I/O	SDRAM ENC, Bidirectional buffer
35	AA27	WM2DTO[4]	O	WM/VWM, Output buffer	90	M27	EDATA[4]	I/O	SDRAM ENC, Bidirectional buffer
36	AA26	WM2DTO[3]	O	WM/VWM, Output buffer	91	M26	EDATA[5]	I/O	SDRAM ENC, Bidirectional buffer
37	AA28	WM2DTO[2]	O	WM/VWM, Output buffer	92	VDD3	VDD3	–	3.3V I/O power supply
38	W24	WM2DTO[1]	O	WM/VWM, Output buffer	93	M25	EDATA[11]	I/O	SDRAM ENC, Bidirectional buffer
39	GND	GND	–	Ground	94	L28	EDATA[6]	I/O	SDRAM ENC, Bidirectional buffer
40	Y25	WM2DTO[0]	O	WM/VWM, Output buffer	95	L27	EDATA[7]	I/O	SDRAM ENC, Bidirectional buffer
41	GND	GND	–	Ground	96	VDD	VDD	–	1.2V LOGIC power supply
42	Y26	SYNC	I/O	TS OUT, Bidirectional buffer	97	M24	EDATA[12]	I/O	SDRAM ENC, Bidirectional buffer
43	Y27	STREAM	I/O	TS OUT,Bidirectional buffer	98	GND	GND	–	Ground
44	Y28	PACKETEN	I/O	TS OUT,Bidirectional buffer	99	L26	EDATA[8]	I/O	SDRAM ENC, Bidirectional buffer
45	VDD3	VDD3	–	3.3V IO power supply	100	GND	GND	–	Ground
46	W25	TSRW	O	TS OUT,Output buffer	101	L25	EDATA[9]	I/O	SDRAM ENC, Bidirectional buffer
47	GND	GND	–	Ground	102	K28	EDQM	O	SDRAM ENC, Output buffer
48	V24	TSCLK	O	TS OUT,Output buffer	103	K27	EWE	O	SDRAM ENC, Output buffer
49	VDD3	VDD3	–	3.3V I/O power supply	104	VDD3	VDD3	–	3.3V I/O power supply
50	W26	NBC10	–	VIDEO-Analog	105	K26	ECAS	O	SDRAM ENC, Output buffer
51	W27	VBGR10	–	VIDEO-Analog	106	L24	EDATA[10]	I/O	SDRAM ENC, Bidirectional buffer
52	W28	AVDDAD10	–		107	K25	ECLKEN	O	Output buffer, 4/6mA
53	V25	AVSSAD10	–		108	VDD	VDD	–	1.2V LOGIC power supply
54	V27	CVBSIN	I	VIDEO-Analog	109	J28	ERAS	O	SDRAM ENC, Output buffer
55	U24	VRTD10	–	VIDEO-Analog	110	GND	GND	–	Ground

No.	BALL Address	Pin Name	I/O	Function	No.	BALL Address	Pin Name	I/O	Function
111	J27	ECS	O	SDRAM ENC, Output buffer	166	VDD3	VDD3	–	3.3V I/O power supply
112	GND	GND	–	Ground	167	C25	AT1DATA[11]	I/O	ATAPI-DVD, Bidirectional buffer
113	J26	EADRS[11]	O	SDRAM ENC, Output buffer	168	D24	AT1DATA[10]	I/O	ATAPI-DVD, Bidirectional buffer
114	J25	EADRS[8]	O	SDRAM ENC, Output buffer	169	E23	AT1DATA[9]	I/O	ATAPI-DVD, Bidirectional buffer
115	GND	GND	–	Ground	170	GND	GND	–	Ground
116	K24	ECLKO	O	SDRAM ENC, Output buffer	171	A26	AT1DATA[8]	I/O	ATAPI-DVD, Bidirectional buffer
117	VDD3	VDD3	–	3.3V I/O power supply	172	A25	AT1DATA[7]	I/O	ATAPI-DVD, Bidirectional buffer
118	H28	EBS[0]	O	SDRAM ENC, Output buffer	173	B25	AT1DATA[6]	I/O	ATAPI-DVD, Bidirectional buffer
119	H27	EBS[1]	O	SDRAM ENC, Output buffer	174	GND	GND	–	Ground
120	H26	EADRS[10]	O	SDRAM ENC, Output buffer	175	C24	AT1DATA[5]	I/O	ATAPI-DVD, Bidirectional buffer
121	VDD	VDD	–	1.2V LOGIC power supply	176	VDD3	VDD3	–	3.3V I/O power supply
122	G28	EADRS[0]	O	SDRAM ENC, Output buffer	177	E22	AT1DATA[4]	I/O	ATAPI-DVD, Bidirectional buffer
123	GND	GND	–	Ground	178	VDD	VDD	–	1.2V LOGIC power supply
124	J24	EADRS[9]	O	SDRAM ENC, Output buffer	179	D23	AT1DATA[3]	I/O	ATAPI-DVD, Bidirectional buffer
125	GND	GND	–	Ground	180	A24	AT1DATA[2]	I/O	ATAPI-DVD, Bidirectional buffer
126	G27	EADRS[1]	O	SDRAM ENC, Output buffer	181	B24	AT1DATA[1]	I/O	ATAPI-DVD, Bidirectional buffer
127	H25	EADRS[6]	O	SDRAM ENC, Output buffer	182	GND	GND	–	Ground
128	G26	EADRS[2]	O	SDRAM ENC, Output buffer	183	C23	AT1DATA[0]	I/O	ATAPI-DVD, Bidirectional buffer
129	VDD3	VDD3	–	3.3V I/O power supply	184	D22	AT1RESET	O	Output buffer,8mA
130	F27	EDATA[17]	I/O	SDRAM ENC, Bidirectional buffer	185	E21	AT1DMARQ	I	ATAPI-DVD, Input buffer
131	F28	EDATA[16]	I/O	SDRAM ENC, Bidirectional buffer	186	GND	GND	–	Ground
132	H24	EADRS[7]	O	SDRAM ENC, Output buffer	187	B23	AT1DMACK	O	ATAPI-DVD, Output buffer
133	VDD	VDD	–	1.2V LOGIC power supply	188	VDD3	VDD3	–	3.3V I/O power supply
134	G25	EADRS[4]	O	SDRAM ENC, Output buffer	189	A23	AT1DIOW	O	ATAPI-DVD, Output buffer
135	GND	GND	–	Ground	190	VDD	VDD	–	1.2V LOGIC power supply
136	F26	EDATA[30]	I/O	SDRAM ENC, Bidirectional buffer	191	C22	AT1DIOR	O	ATAPI-DVD, Output buffer
137	GND	GND	–	Ground	192	D21	AT1IORDY	I	ATAPI-DVD, Input buffer
138	E27	EDATA[19]	I/O	SDRAM ENC, Bidirectional buffer	193	B22	AT1INTRQ	I	ATAPI-DVD, Input buffer
139	E28	EDATA[18]	I/O	SDRAM ENC, Bidirectional buffer	194	GND	GND	–	Ground
140	F25	EDATA[31]	I/O	SDRAM ENC, Bidirectional buffer	195	E20	AT1ADR[2]	O	ATAPI-DVD, Output buffer
141	VDD3	VDD3	–	3.3V I/O power supply	196	A22	AT1ADR[1]	O	ATAPI-DVD, Output buffer
142	E26	EDATA[29]	I/O	SDRAM ENC, Bidirectional buffer	197	C21	AT1ADR[0]	O	ATAPI-DVD, Output buffer
143	G24	EADRS[5]	O	SDRAM ENC, Output buffer	198	GND	GND	–	Ground
144	D28	EDATA[20]	I/O	SDRAM ENC, Bidirectional buffer	199	B21	AT1CS[1]	O	ATAPI-DVD, Output buffer
145	VDD	VDD	–	1.2V LOGIC power supply	200	VDD3	VDD3	–	3.3V I/O power supply
146	D27	EDATA[21]	I/O	SDRAM ENC, Bidirectional buffer	201	A21	AT1CS[0]	O	ATAPI-DVD, Output buffer
147	GND	GND	–	Ground	202	VDD	VDD	–	1.2V LOGIC power supply
148	C28	EDATA[22]	I/O	SDRAM ENC, Bidirectional buffer	203	E19	AT2DATA[15]	I/O	ATAPI-HDD, Bidirectional buffer
149	GND	GND	–	Ground	204	D20	AT2DATA[14]	I/O	ATAPI-HDD, Bidirectional buffer
150	F24	EADRS[3]	O	SDRAM ENC, Output buffer	205	C20	AT2DATA[13]	I/O	ATAPI-HDD, Bidirectional buffer
151	E25	EDATA[28]	I/O	SDRAM ENC, Bidirectional buffer	206	GND	GND	–	Ground
152	D26	EDATA[26]	I/O	SDRAM ENC, Bidirectional buffer	207	B20	AT2DATA[12]	I/O	ATAPI-HDD, Bidirectional buffer
153	VDD3	VDD3	–	3.3V I/O power supply	208	A20	AT2DATA[11]	I/O	ATAPI-HDD, Bidirectional buffer
154	B28	EDATA[23]	I/O	SDRAM ENC, Bidirectional buffer	209	D19	AT2DATA[10]	I/O	ATAPI-HDD, Bidirectional buffer
155	C27	EDATA[25]	I/O	SDRAM ENC, Bidirectional buffer	210	GND	GND	–	Ground
156	B27	EDATA24]	I/O	SDRAM ENC, Bidirectional buffer	211	E18	AT2DAT[9]	I/O	ATAPI-HDD, idirectional buffer
157	VDD	VDD	–	1.2V LOGIC power supply	212	VDD3	VDD3	–	3.3V I/O power supply
158	D25	EDATA[27]	I/O	SDRAM ENC, Bidirectional buffer	213	C19	AT2DATA[8]	I/O	ATAPI-HDD, Bidirectional buffer
159	GND	GND	–	Ground	214	VDD	VDD	–	1.2V LOGIC power supply
160	C26	AT1DATA[15]	I/O	ATAPI-DVD, Bidirectional buffer	215	B19	AT2DATA[7]	I/O	ATAPI-HDD, Bidirectional buffer
161	E24	AT1DATA[14]	I/O	ATAPI-DVD, Bidirectional buffer	216	A19	AT2DATA[6]	I/O	ATAPI-HDD, Bidirectional buffer
162	GND	GND	–	Ground	217	D18	AT2DATA[5]	I/O	ATAPI-HDD, Bidirectional buffer
163	A28	VDD	–	1.2V LOGIC power supply	218	GND	GND	–	Ground
164	B26	AT1DATA[13]	I/O	ATAPI-DVD, Bidirectional buffer	219	C18	AT2DATA[4]	I/O	ATAPI-HDD, Bidirectional buffer
165	A27	AT1DATA[12]	I/O	ATAPI-DVD, Bidirectional buffer	220	E17	AT2DATA[3]	I/O	ATAPI-HDD, Bidirectional buffer

No.	BALL Address	Pin Name	I/O	Function	No.	BALL Address	Pin Name	I/O	Function
221	B18	AT2DATA[2]	I/O	ATAPI-HDD, Bidirectional buffer	276	VDD3	VDD3	–	3.3V I/O power supply
222	GND	GND	–	Ground	277	C11	AMCLK2	I	CLOCK, Input buffer
223	A18	AT2DATA[1]	I/O	ATAPI-HDD, Bidirectional buffer	278	GND	GND	–	Ground
224	VDD3	VDD3	–	3.3V I/O power supply	279	D11	ARDATA[1]	I/O	SDRAM-ATAPI, Bidirectional buffer
225	D17	AT2DATA[0]	I/O	ATAPI-HDD, Bidirectional buffer	280	VDD3	VDD3	–	3.3V I/O power supply
226	VDD	VDD	–	1.2V LOGIC power supply	281	A10	ARDATA[14]	I/O	SDRAM-ATAPI, Bidirectional buffer
227	C17	AT2RESET	I/O	ATAPI-HDD, Bidirectional buffer	282	VDD	VDD	–	1.2V LOGIC power supply
228	B17	AT2DMARQ	I	ATAPI-HDD, Input buffer	283	B10	ARDATA[15]	I/O	SDRAM-ATAPI, Bidirectional buffer
229	E16	AT2DMACK	O	ATAPI-HDD, Output buffer	284	E11	ARDATA[0]	I/O	SDRAM-ATAPI, Bidirectional buffer
230	GND	GND	–	Ground	285	C10	ARDATA[4]	I/O	SDRAM-ATAPI, Bidirectional buffer
231	A17	AT2DIOW	O	ATAPI-HDD, Output buffer	286	GND	GND	–	Ground
232	D16	AT2DIOR	O	ATAPI-HDD, Output buffer	287	D10	ARDATA[3]	I/O	SDRAM-ATAPI, Bidirectional buffer
233	C16	AT2IORDY	I	ATAPI-HDD, Input buffer	288	A9	ARDATA[11]	I/O	SDRAM-ATAPI, Bidirectional buffer
234	GND	GND	–	Ground	289	B9	ARDATA[12]	I/O	SDRAM-ATAPI, Bidirectional buffer
235	B16	AT2INTRQ	I	ATAPI-HDD, Input buffer	290	GND	GND	–	Ground
236	VDD3	VDD3	–	3.3V I/O power supply	291	C9	ARDATA[13]	I/O	SDRAM-ATAPI, Bidirectional buffer
237	A16	AT2ADR[2]	I/O	ATAPI-HDD, Bidirectional buffer	292	E10	ARDATA[2]	I/O	SDRAM-ATAPI, Bidirectional buffer
238	VDD	VDD	–	1.2V LOGIC power supply	293	D9	ARDATA[6]	I/O	SDRAM-ATAPI, Bidirectional buffer
239	E15	AT2ADR[1]	I/O	ATAPI-HDD, Bidirectional buffer	294	VDD3	VDD3	–	3.3V I/O power supply
240	GND	GND	–	Ground	295	A8	ARDATA[10]	I/O	SDRAM-ATAPI, Bidirectional buffer
241	D15	AT2ADR[0]	I/O	ATAPI-HDD, Bidirectional buffer	296	B8	ARDATA[9]	I/O	SDRAM-ATAPI, Bidirectional buffer
242	VDD	VDD	–	1.2V LOGIC power supply	297	C8	ARWE	O	SDRAM-ATAPI, Output buffer
243	C15	AT2CS[1]	O	ATAPI-HDD, Output buffer	298	VDD	VDD	–	1.2V LOGIC power supply
244	GND	GND	–	Ground	299	A7	ARDATA[8]	I/O	SDRAM-ATAPI, Bidirectional buffer
245	B15	AT2CS[0]	O	ATAPI-HDD, Output buffer	300	E9	ARDATA[5]	I/O	SDRAM-ATAPI, Bidirectional buffer
246	VDD	VDD	–	1.2V LOGIC power supply	301	D8	ARDQM[0]	O	SDRAM-ATAPI, Output buffer
247	A15	AT2MODE	I	ATAPI-HDD, Input buffer	302	GND	GND	–	Ground
248	GND	GND	–	Ground	303	B7	ARDQM[1]	O	SDRAM-ATAPI, Output buffer
249	GND	GND	–	Ground	304	C7	ARCS[0]	O	SDRAM-ATAPI, Output buffer
250	A14	RESET	I	Input buffer (5V tolerant)	305	VDD3	VDD3	–	3.3V I/O power supply
251	VDD3	VDD3	–	3.3V I/O power supply	306	A6	ARCLKO	O	SDRAM-ATAPI, Output buffer
252	B14	VDD	–	1.2V LOGIC power supply	307	GND	GND	–	Ground
253	C14	DBI	I	TEST, Input buffer	308	B6	ARADRS[12]	O	SDRAM-ATAPI, Output buffer
254	GND	GND	–	Ground	309	E8	ARDATA[7]	I/O	SDRAM-ATAPI, Bidirectional buffer
255	D14	TRACE	I	TEST, Input buffer	310	D7	ARRAS	O	SDRAM-ATAPI, Output buffer
256	E14	VDD	–	1.2V LOGIC power supply	311	VDD3	VDD3	–	3.3V I/O power supply
257	A13	PCO	O	CLOCK, 3 state output buffer	312	A5	ARADRS[11]	O	SDRAM-ATAPI, Output buffer
258	GND	GND	–	Ground	313	C6	ARADRS[13]	O	SDRAM-ATAPI, Output buffer
259	B13	PLL3AVSS	–		314	B5	ARADRS[9]	O	SDRAM-ATAPI, Output buffer
260	C13	PLL3AVDD	–		315	VDD	VDD	–	1.2V LOGIC power supply
261	D13	VMCLK	I	CLOCK, Input buffer	316	E7	ARCAS	O	SDRAM-ATAPI, Output buffer
262	E13	PLL1AVDD	–		317	D6	ARADRS[14]	O	SDRAM-ATAPI, Output buffer
263	A12	PLL1AVSS	–		318	C5	ARADRS[1]	O	SDRAM-ATAPI, Output buffer
264	VDD3	VDD3	–	3.3V I/O power supply	319	GND	GND	–	Ground
265	B12	ADCCLKO	O	CLOCK, Output buffer	320	B4	ARADRS[3]	O	SDRAM-ATAPI, Output buffer
266	GND	GND	–	Ground	321	A4	ARADRS[8]	O	SDRAM-ATAPI, Output buffer
267	C12	VDD	–	1.2V LOGIC power supply	322	A3	ARADRS[7]	O	SDRAM-ATAPI, Output buffer
268	VDD3	VDD3	–	3.3V I/O power supply	323	GND	GND	–	Ground
269	D12	DVAMCLKO	O	CLOCK, Output buffer	324	E6	ARCS[1]	O	SDRAM-ATAPI, Output buffer
270	GND	GND	–	Ground	325	D5	ARADRS[0]	O	SDRAM-ATAPI, Output buffer
271	A11	DACCLKO	O	CLOCK, Output buffer	326	C4	ARADRS[2]	O	SDRAM-ATAPI, Output buffer
272	VDD3	VDD3	–	3.3V I/O power supply	327	VDD3	VDD3	–	3.3V I/O power supply
273	E12	DVAMCLKI	I	AUDIO CLOCK, Input buffer	328	A2	ARADRS[5]	O	SDRAM-ATAPI, Output buffer
274	GND	GND	–	Ground	329	B3	ARADRS[6]	O	SDRAM-ATAPI, Output buffer
275	B11	AMCLK1	I	CLOCK, Input buffer	330	B2	ARADRS[4]	O	SDRAM-ATAPI, Output buffer

No.	BALL Address	Pin Name	I/O	Function	No.	BALL Address	Pin Name	I/O	Function
331	GND	GND	–	Ground	386	VDD	VDD	–	1.2V LOGIC power supply
332	E5	ARADRS[10]	O	SDRAM-ATAPI, Output buffer	387	GND	GND	–	Ground
333	D4	SRCBCKI	I	AUDIO, Input buffer	388	L3	SPIDATAI	I/O	HOST, Bidirectional buffer
334	VDD3	VDD3	–	3.3V I/O power supply	389	VDD	VDD	–	1.2V LOGIC power supply
335	C3	SRCLRCKI	I	AUDIO, Input buffer	390	M5	SPIDATAO	I/O	HOST, Bidirectional buffer
336	B1	SRCDATAI	I	AUDIO, Input buffer	391	GND	GND	–	Ground
337	A1	VDD	–	1.2V LOGIC power supply	392	L2	SPICLK	I/O	HOST, Bidirectional buffer
338	GND	GND	–	Ground	393	GND	GND	–	Ground
339	C2	SRCBCKO	O	AUDIO, Output buffer	394	L1	DDATA[0]	I/O	SDRAM-DEC, Bidirectional buffer
340	VDD	VDD	–	1.2V LOGIC power supply	395	VDD3	VDD3	–	3.3V I/O power supply
341	D3	SRCLRCKO	O	AUDIO, Output buffer	396	M4	DDATA[14]	I/O	SDRAM-DEC, Bidirectional buffer
342	E4	SRCDATAO	O	AUDIO, Output buffer	397	M3	DDATA[15]	I/O	SDRAM-DEC, Bidirectional buffer
343	F5	SPDIFI	I	AUDIO, Input buffer	398	M2	DDATA[2]	I/O	SDRAM-DEC, Bidirectional buffer
344	D2	SPDIFO	O	AUDIO, Output buffer	399	VDD	VDD	–	1.2V LOGIC power supply
345	C1	DVLRCK	I/O	AUDIO, Bidirectional buffer	400	N5	DDATA[11]	I/O	SDRAM-DEC, Bidirectional buffer
346	E3	DVBCK	I/O	AUDIO, Bidirectional buffer	401	GND	GND	–	Ground
347	D1	DVADATA	I/O	AUDIO, Bidirectional buffer	402	M1	DDATA[1]	I/O	SDRAM-DEC, Bidirectional buffer
348	F4	ACMOD[1]	I	AUDIO, Input buffer	403	GND	GND	–	Ground
349	G5	ACMOD[0]	I	AUDIO, Input buffer	404	N4	DDATA[12]	I/O	SDRAM-DEC, Bidirectional buffer
350	E1	LRCKI	I	AUDIO, Input buffer	405	N3	DDATA[13]	I/O	SDRAM-DEC, Bidirectional buffer
351	E2	BCKI	I	AUDIO, Input buffer	406	N2	DDATA[3]	I/O	SDRAM-DEC, Bidirectional buffer
352	GND	GND	–	Ground	407	VDD3	VDD3	–	3.3V I/O power supply
353	F3	ADATAI	I	AUDIO, Input buffer	408	N1	DDATA[4]	I/O	SDRAM-DEC, Bidirectional buffer
354	GND	GND	–	Ground	409	P5	DDATA[8]	I/O	SDRAM-DEC, Bidirectional buffer
355	G4	LRCKO	O	AUDIO, Output buffer	410	P4	DDATA[9]	I/O	SDRAM-DEC, Bidirectional buffer
356	VDD	VDD	–	1.2V LOGIC power supply	411	VDD	VDD	–	1.2V LOGIC power supply
357	H5	BCKO	O	AUDIO, Output buffer	412	P3	DDATA[10]	I/O	SDRAM-DEC, Bidirectional buffer
358	F1	ADATAO	O	DVD-AUDIO, Output buffer	413	GND	GND	–	Ground
359	F2	DVDADT[7]	O	DVD-AUDIO, Output buffer	414	P2	DDATA[6]	I/O	SDRAM-DEC, Bidirectional buffer
360	G2	DVDADT[6]	O	DVD-AUDIO, Output buffer	415	GND	GND	–	Ground
361	G3	DVDADT[5]	O	DVD-AUDIO, Output buffer	416	P1	DDATA[5]	I/O	SDRAM-DEC, Bidirectional buffer
362	J5	DVDADT[4]	O	DVD-AUDIO, Output buffer	417	R1	DDATA[7]	I/O	SDRAM-DEC, Bidirectional buffer
363	H4	DVDADT[3]	O	DVD-AUDIO, Output buffer	418	R2	DDQM[0]	O	SDRAM-DEC, Output buffer
364	G1	DVDADT[2]	O	DVD-AUDIO, Output buffer	419	VDD3	VDD3	–	3.3V I/O power supply
365	H3	DVDADT[1]	O	DVD-AUDIO, Output buffer	420	R3	DWE	O	SDRAM-DEC, Output buffer
366	H2	DVDADT[0]	O	DVD-AUDIO, Output buffer	421	VDD	VDD	–	1.2V LOGIC power supply
367	H1	DVDAADR[1]	O	DVD-AUDIO, Output buffer	422	R4	DDQM[1]	O	SDRAM-DEC, Output buffer
368	K5	DVDAADR[0]	O	DVD-AUDIO, Output buffer	423	GND	GND	–	Ground
369	J4	DVDAREQ	I/O	DVD-AUDIO, Bidirectional buffer	424	R5	DCLKO	O	SDRAM-DEC, Output buffer
370	GND	GND	–	Ground	425	VDD3	VDD3	–	3.3V I/O power supply
371	J3	DVDAACK	O	DVD-AUDIO, Output buffer	426	VDD	VDD	–	1.2V LOGIC power supply
372	VDD	VDD	–	1.2V LOGIC power supply	427	T1	DCAS	O	SDRAM-DEC, Output buffer
373	J2	SCICS[1]	I/O	HOST, Bidirectional buffer	428	GND	GND	–	Ground
374	VDD3	VDD3	–	3.3V I/O power supply	429	T2	DRAS	–	SDRAM-DEC, Output buffer
375	J1	SCICS[0]	I/O	HOST, Bidirectional buffer	430	GND	GND	–	Ground
376	VDD	VDD	–	1.2V LOGIC power supply	431	T3	DCS	O	SDRAM-DEC, Output buffer
377	K4	SCIDATA[1]	I/O	HOST, Bidirectional buffer	432	T4	DADRS[11]	O	SDRAM-DEC, Output buffer
378	GND	GND	–	Ground	433	U1	DBS[0]	O	SDRAM-DEC, Output buffer
379	L5	SCIDATA[0]	I/O	HOST, Bidirectional buffer	434	VDD3	VDD3	–	3.3V I/O power supply
380	K3	VDD	–	1.2V LOGIC power supply	435	T5	DADRS[9]	O	SDRAM-DEC, Output buffer
381	K2	SCICLK[1]	I/O	HOST, Bidirectional buffer	436	U2	DBS[1]	O	SDRAM-DEC, Output buffer
382	GND	GND	–	Ground	437	U3	DADRS[10]	O	SDRAM-DEC, Output buffer
383	K1	SCICLK[0]	I/O	HOST, Bidirectional buffer	438	VDD	VDD	–	1.2V LOGIC power supply
384	GND	GND	–	Ground	439	U4	DADRS[7]	O	SDRAM-DEC, Output buffer
385	L4	SPICS	I/O	HOST, Bidirectional buffer	440	GND	GND	–	Ground

No.	BALL Address	Pin Name	I/O	Function	No.	BALL Address	Pin Name	I/O	Function
441	V1	DADRS[0]	O	SDRAM-DEC, Output buffer	496	VDD	VDD	–	1.2V LOGIC power supply
442	GND	GND	–	Ground	497	AD4	HDACK[0]	O	Output buffer, 4mA
443	V2	DADRS[1]	O	SDRAM-DEC, Output buffer	498	AF1	HDREQ[1]	I	HOST, Input buffer
444	VDD	VDD	–	1.2V LOGIC power supply	499	AE3	HDREQ[0]	I	HOST, Input buffer
445	U5	DADRS[8]	O	SDRAM-DEC, Output buffer	500	AC5	HWAIT	I	HOST, Input buffer
446	GND	GND	–	Ground	501	AF2	HOE	O	HOST, Output buffer
447	V3	DADRS[5]	O	SDRAM-DEC, Output buffer	502	VDD3	VDD3	–	3.3V I/O power supply
448	VDD3	VDD3	–	3.3V I/O power supply	503	GND	GND	–	Ground
449	V4	DADRS[6]	O	SDRAM-DEC, Output buffer	504	AE4	VDD	–	1.2V LOGIC power supply
450	W1	DADRS[3]	O	SDRAM-DEC, Output buffer	505	AD5	HCS[5]	O	HOST, Output buffer
451	W2	DADRS[2]	O	SDRAM-DEC, Output buffer	506	AG2	HCS[4]	O	HOST, Output buffer
452	VDD	VDD	–	1.2V LOGIC power supply	507	AF3	HCS[3]	O	HOST, Output buffer
453	W3	DADRS[4]	O	SDRAM-DEC, Output buffer	508	AG3	HCS[2]	O	HOST, Output buffer
454	GND	GND	–	Ground	509	AH2	HCS[1]	O	HOST, Output buffer
455	GND	GND	–	Ground	510	GND	GND	–	Ground
456	GND	GND	–	Ground	511	AF4	HCS[0]	O	HOST, Output buffer
457	V5	INT[7]	I/O	HOST, Bidirectional buffer	512	VDD	VDD	–	1.2V LOGIC power supply
458	VDD	VDD	–	1.2V LOGIC power supply	513	AD6	HADRS[10]	I/O	HOST, Bidirectional buffer
459	W4	INT[6]	I/O	HOST, Bidirectional buffer	514	GND	GND	–	Ground
460	Y1	INT[5]	I/O	HOST, Bidirectional buffer	515	AE5	HADRS[11]	I/O	HOST, Bidirectional buffer
461	Y2	INT[4]	I/O	HOST, Bidirectional buffer	516	AG4	HADRS[13]	I/O	HOST, Bidirectional buffer
462	VDD3	VDD3	–	3.3V I/O power supply	517	AH3	HADRS[30]	I/O	HOST, Bidirectional buffer
463	Y3	INT[3]	I/O	HOST, Bidirectional buffer	518	VDD3	VDD3	–	3.3V I/O power supply
464	GND	GND	–	Ground	519	AF5	HADRS[12]	I/O	HOST, Bidirectional buffer
465	Y4	INT[2]	I/O	HOST, Bidirectional buffer	520	GND	GND	–	Ground
466	VDD	VDD	–	1.2V LOGIC power supply	521	AH4	HADRS[14]	I/O	HOST, Bidirectional buffer
467	W5	INT[1]	I/O	HOST, Bidirectional buffer	522	AE6	HDATA[1]	I/O	HOST, Bidirectional buffer
468	AA1	INT[0]	I/O	HOST, Bidirectional buffer	523	AD7	HADRS[9]	I/O	HOST, Bidirectional buffer
469	AA2	SCLK[1]	I/O	HOST, Bidirectional buffer	524	VDD3	VDD3	–	3.3V I/O power supply
470	AA3	SCLK[0]	I/O	HOST, Bidirectional buffer	525	AG5	HDATA[15]	I/O	HOST, Bidirectional buffer
471	AB1	CTS[3]	I/O	HOST, Bidirectional buffer	526	GND	GND	–	Ground
472	GND	GND	–	Ground	527	AH5	HDATA[14]	I/O	HOST, Bidirectional buffer
473	Y5	CTS[2]	I/O	HOST, Bidirectional buffer	528	GND	GND	–	Ground
474	GND	GND	–	Ground	529	AF6	HDATA[0]	I/O	HOST, Bidirectional buffer
475	AA4	CTS[1]	I/O	HOST, Bidirectional buffer	530	AD8	HDATA[6]	I/O	HOST, Bidirectional buffer
476	VDD	VDD	–	1.2V LOGIC power supply	531	AE7	HDATA[2]	I/O	HOST, Bidirectional buffer
477	AB3	CTS[0]	I/O	HOST, Bidirectional buffer	532	VDD3	VDD3	–	3.3V I/O power supply
478	AB2	RTS[3]	I/O	HOST, Bidirectional buffer	533	AG6	HDATA[12]	I/O	HOST, Bidirectional buffer
479	AC2	RTS[2]	I/O	HOST, Bidirectional buffer	534	VDD	VDD	–	1.2V LOGIC power supply
480	AC1	RTS[1]	I/O	HOST, Bidirectional buffer	535	AH6	HDATA[13]	I/O	HOST, Bidirectional buffer
481	AA5	RTS[0]	I/O	HOST, Bidirectional buffer	536	AG7	HDATA[11]	I/O	HOST, Bidirectional buffer
482	VDD3	VDD3	–	3.3V I/O power supply	537	AF7	HDATA[3]	I/O	HOST, Bidirectional buffer
483	AB4	RX[3]	I/O	HOST, Bidirectional buffer	538	GND	GND	–	Ground
484	GND	GND	–	Ground	539	AE8	HDATA[5]	I/O	HOST, Bidirectional buffer
485	AC3	RX[2]	I/O	HOST, Bidirectional buffer	540	GND	GND	–	Ground
486	VDD	VDD	–	1.2V LOGIC power supply	541	AD9	HDATA[7]	I/O	HOST, Bidirectional buffer
487	AD2	RX[1]	I/O	HOST, Bidirectional buffer	542	AF8	HDATA[4]	I/O	HOST, Bidirectional buffer
488	AD1	RX[0]	I/O	HOST, Bidirectional buffer	543	AH7	HDATA[10]	I/O	HOST, Bidirectional buffer
489	AB5	TX[3]	I/O	HOST, Bidirectional buffer	544	VDD3	VDD3	–	3.3V I/O power supply
490	AC4	TX[2]	I/O	HOST, Bidirectional buffer	545	AG8	HDATA[8]	I/O	HOST, Bidirectional buffer
491	AD3	TX[1]	I/O	HOST, Bidirectional buffer	546	VDD	VDD	–	1.2V LOGIC power supply
492	GND	GND	–	Ground	547	AH8	HDATA[9]	I/O	HOST, Bidirectional buffer
493	AE1	TX[0]	I/O	HOST, Bidirectional buffer	548	AE9	HDWE	O	HOST, Output buffer
494	GND	GND	–	Ground	549	AF9	DQMWS[0]	O	HOST, Output buffer
495	AE2	HDACK[1]	O	HOST, Output buffer	550	GND	GND	–	Ground

No.	BALL Address	Pin Name	I/O	Function
551	AD10	HDCS[1]	O	HOST, Output buffer
552	GND	GND	–	Ground
553	AG9	DQMWS[1]	O	HOST, Output buffer
554	VDD3	VDD3	–	3.3V I/O power supply
555	AH9	HCLKO	O	HOST, Output buffer
556	GND	GND	–	Ground
557	AE10	HDCS[0]	O	HOST, Output buffer
558	VDD3	VDD3	–	3.3V I/O power supply
559	AD11	HADRS[15]	I/O	HOST, Bidirectional buffer
560	VDD	VDD	–	1.2V LOGIC power supply
561	AF10	HCAS	O	HOST, Output buffer
562	AG10	HRAS	O	HOST, Output buffer
563	AH10	HCLKEN	O	HOST, Output buffer
564	GND	GND	–	Groud
565	AE11	HADRS[16]	I/O	HOST, Bidirectional buffer
566	GND	GND	–	Ground
567	AF11	HADRS[17]	I/O	HOST, Bidirectional buffer
568	AD12	HADRS[27]	I/O	HOST, Bidirectional buffer
569	AG11	HADRS[20]	I/O	HOST, Bidirectional buffer
570	VDD3	VDD3	–	3.3V I/O power supply
571	AH11	HADRS[21]	I/O	HOST, Bidirectional buffer
572	VDD	VDD	–	1.2V LOGIC power supply
573	AE12	HADRS[19]	I/O	HOST, Bidirectional buffer
574	AF12	HADRS[18]	I/O	HOST, Bidirectional buffer
575	AG12	HADRS[23]	I/O	HOST, Bidirectional buffer
576	GND	GND	–	Ground
577	AD13	HADRS[28]	I/O	HOST, Bidirectional buffer
578	VDD	VDD	–	1.2V LOGIC power supply
579	AH12	HADRS[22]	I/O	HOST, Bidirectional buffer
580	GND	GND	–	Ground
581	AE13	HADRS[29]	I/O	HOST, Bidirectional buffer
582	VDD	VDD	–	1.2V LOGIC power supply
583	AF13	HADRS[24]	I/O	HOST, Bidirectional buffer
584	VDD3	VDD3	–	3.3V I/O power supply
585	AG13	HADRS[25]	I/O	HOST, Bidirectional buffer
586	GND	GND	–	Ground
587	AH13	HADRS[26]	I/O	HOST, Bidirectional buffer
588	GND	GND	–	Ground
589	GND	GND	–	Ground
590	AD14	TESTMOD[6]	I	TEST, Input buffer
591	AE14	VDD	–	1.2V LOGIC power supply
592	AF14	TESTMOD[5]	I	TEST, Input buffer
593	GND	GND	–	Ground
594	AG14	TESTMOD[4]	I	TEST, Input buffer
595	VDD	VDD	–	1.2V LOGIC power supply
596	AH14	TESTMOD[3]	I	TEST, Input buffer
597	GND	GND	–	Ground
598	AH15	TESTMOD[2]	I	TEST, Input buffer
599	VDD	VDD	–	1.2V LOGIC power supply
600	AG15	TESTMOD[1]	I	TEST, Input buffer
601	GND	GND	–	Ground
602	AF15	TESTMOD[0]	I	TEST, Input buffer
603	AE15	CSYNC	I	CLOCK, Input buffer
604	AD15	VIPWM	O	CLOCK, Output buffer
605	AH16	PLLON	I	TEST, Input buffer

No.	BALL Address	Pin Name	I/O	Function
606	AG16	TMS	I	TEST, nput buffer
607	GND	GND	–	Ground
608	AF16	TDO	O	TEST, Output buffer
609	VDD	VDD	–	1.2V LOGIC power supply
610	AE16	TDI	I	TEST, Input buffer
611	VDD3	VDD3	–	3.3V I/O power supply
612	AH17	TRST	I	TEST, Input buffer
613	GND	GND	–	Ground
614	AD16	TCK	I	TEST, Input buffer
615	VDD3	VDD3	–	3.3V I/O power supply
616	AG17	PLLRST	I	CLOCK, Input buffer
617	GND	GND	–	Ground
618	AF17	DVVCLKO	O	CLOCK, Output buffer
619	VDD3	VDD3	–	3.3V I/O power supply
620	AE17	PXCLK	O	CLOCK, Output buffer
621	GND	GND	–	Ground
622	AH18	REC656I[7]	I	VIDEO-Digital, Input buffer
623	VDD	VDD	–	1.2V LOGIC power supply
624	AG18	REC656I[6]	I	VIDEO-Digital, Input buffer
625	GND	GND	–	Ground
626	AD17	REC656I[5]	I	VIDEO-Digital, Input buffer
627	AF18	REC656I[4]	I	VIDEO-Digital, Input buffer
628	AE18	REC656I[3]	I	VIDEO-Digital, Input buffer
629	AH19	REC656I[2]	I	VIDEO-Digital, Input buffer
630	AG19	REC656I[1]	I	VIDEO-Digital, Input buffer
631	AF19	REC656I[0]	I	VIDEO-Digital, Input buffer
632	AH20	DVVIDEO[7]	I/O	VIDEO-Digital, Bidirectional buffer
633	AD18	DVVIDEO[6]	I/O	VIDEO-Digital, Bidirectional buffer
634	AE19	DVVIDEO[5]	I/O	VIDEO-Digital, Bidirectional buffer
635	VDD3	VDD3	–	3.3V I/O power supply
636	AG20	DVVCLKI	I	CLOCK, Input buffer
637	AF20	PLL2AVDD	–	
638	AH21	PLL2AVSS	–	
639	AD19	R656CLKI	I	CLOCK, Input buffer
640	GND	GND	–	Ground
641	AE20	ADMCLKI	I	CLOCKI, Input buffer
642	VDD3	VDD3	–	3.3V I/O power supply
643	AG21	DVVIDEO[4]	I/O	VIDEO-Digital, Bidirectional buffer
644	AF21	DVVIDEO[3]	I/O	VIDEO-Digital, Bidirectional buffer
645	AD20	DVVIDEO[2]	I/O	VIDEO-Digital, Bidirectional buffer
646	AH22	DVVIDEO[1]	I/O	VIDEO-Digital, Bidirectional buffer
647	AG22	DVVIDEO[0]	I/O	VIDEO-Digital, Bidirectional buffer
648	AE21	REC656O[7]	O	VIDEO-Digital, Output buffer
649	AF22	REC656O[6]	O	VIDEO-Digital, Output buffer
650	VDD	VDD	–	1.2V LOGIC power supply
651	AH23	DVREQ	I	VIDEO-Digital, Input buffer
652	GND	GND	–	Ground
653	AG23	DVACK	O	VIDEO-Digital, Output buffer
654	GND	GND	–	Ground
655	AE22	AVSS1DA10	–	
656	AD21	GOUT	O	VIDEO-Analog
657	AH24	AVDD1DA10	–	
658	AF23	BOUT	O	VIDEO-Analog
659	AE23	AVDD1DA10	–	
660	AG24	ROUT	O	VIDEO-Analog

No.	BALL Address	Pin Name	I/O	Function	No.	BALL Address	Pin Name	I/O	Function
661	AD22	IREF[0]	–	VIDEO-Analog	669	AD23	REC656O[4]	O	VIDEO-Digital, Output buffer
662	AF24	IREF[1]	–	VIDEO-Analog	670	AH27	REC656O[3]	O	VIDEO-Digital, Output buffer
663	AG25	YOUT	O	VIDEO-Analog	671	AG26	REC656O[2]	O	VIDEO-Digital, Output buffer
664	AH25	AVSS2DA10	–		672	AG27	REC656O[1]	O	VIDEO-Digital, Output buffer
665	AE24	COUT	O	VIDEO-Analog	673	GND	GND	–	Ground
666	AH26	AVDD2DA10	–		674	AD24	REC656O[0]	O	VIDEO-Digital, Output buffer
667	GND	GND	–	Ground	675	AE25	AGCCTL	O	VIDEO-Analog
668	AF25	REC656O[5]	O	VIDEO-Digital, Output buffer					

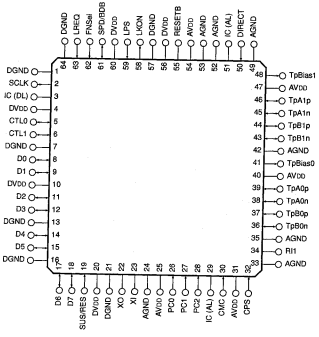
● Others

BALL Address	Pin Name	BALL Address	Pin Name	BALL Address	Pin Name	BALL Address	Pin Name
AA23	GND	P12	GND	AC11	VDD	AB23	VDD3
AA6	GND	P13	GND	AC14	VDD	AB6	VDD3
AC12	GND	P14	GND	AC6	VDD	AC10	VDD3
AC17	GND	P15	GND	AC8	VDD	AC13	VDD3
AC20	GND	P16	GND	L6	VDD	AC16	VDD3
AC9	GND	P17	GND	AC11	VDD	AC19	VDD3
F11	GND	R12	GND	AC14	VDD	AC22	VDD3
F14	GND	R13	GND	AC6	VDD	AC7	VDD3
F17	GND	R14	GND	AC8	VDD	F10	VDD3
F20	GND	R15	GND	L6	VDD	F13	VDD3
F23	GND	R16	GND	P6	VDD	F16	VDD3
F8	GND	R17	GND	U6	VDD	F19	VDD3
H6	GND	R23	GND	Y6	VDD	F22	VDD3
J23	GND	R6	GND	F12	VDD	F7	VDD3
M12	GND	T12	GND	F6	VDD	G23	VDD3
M13	GND	T13	GND	F9	VDD	G6	VDD3
M14	GND	T14	GND	J6	VDD	K23	VDD3
M15	GND	T15	GND	AC15	VDD	K6	VDD3
M16	GND	T16	GND	AC18	VDD	N23	VDD3
M17	GND	T17	GND	AC21	VDD	N6	VDD3
M23	GND	U12	GND	AC23	VDD	T23	VDD3
M6	GND	U13	GND	F15	VDD	T6	VDD3
N12	GND	U14	GND	F18	VDD	W23	VDD3
N13	GND	U15	GND	F21	VDD	W6	VDD3
N14	GND	U16	GND	H23	VDD		
N15	GND	U17	GND	L23	VDD		
N16	GND	V23	GND	P23	VDD		
N17	GND	V6	GND	U23	VDD		
				Y23	VDD		

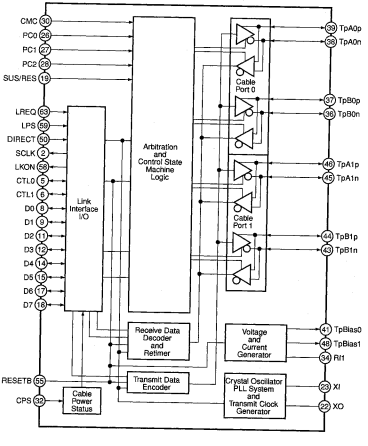
■ UPD72852AGB-8EU (MAIN ASSY : IC5101)

• IEEE1394 Physical IC

● Pin Arrangement



● Block Diagram



● Pin Function

• Cable Interface Pins

No.	Pin Name	I/O	Function
39	TpA0p	I/O	Port 0 twisted pair cable A positive phase I/O
38	TpA0n	I/O	Port 0 twisted pair cable A negative phase I/O
37	TpB0p	I/O	Port 0 twisted pair cable B positive phase I/O
36	TpB0n	I/O	Port 0 twisted pair cable B negative phase I/O
46	TpA1p	I/O	Port 1 twisted pair cable A positive phase I/O
45	TpA1n	I/O	Port 1 twisted pair cable A negative phase I/O
44	TpB1p	I/O	Port 1 twisted pair cable B positive phase I/O
43	TpB1n	I/O	Port 1 twisted pair cable B negative phase I/O
19	SUS/RES	I	Suspend/Resume function select 1 : Suspend/Resume on (IEEE1394a-2000 compliant) 0 : Suspend/Resume off (P1394a draft 1.3 compliant)
32	CPS	I	Cable power status Connect to the cable through a 390 kΩ resistor and to the GND through a 100 kΩ resistor. 0 : Cable power fail 1 : Cable power on

• Link Interface Pins

No.	Pin Name	I/O	Function
8	D0	I/O	Data input/output (bit 0)
9	D1	I/O	Data input/output (bit 1)
11	D2	I/O	Data input/output (bit 2)
12	D3	I/O	Data input/output (bit 3)
14	D4	I/O	Data input/output (bit 4)
15	D5	I/O	Data input/output (bit 5)
17	D6	I/O	Data input/output (bit 6)
18	D7	I/O	Data input/output (bit 7)
5	CTL0	I/O	Link interface control (bit 0)
6	CTL1	I/O	Link interface control (bit 1)
63	LREQ	I	Link request input
2	SCLK	O	Link control output clock LPS 1 : 49.152 MHz output LPS 0 : Clamp to 0 (The clock signal will be output within 25 µsec after change to "0")
59	LPS	I	Link power status input 0 : Link power off 1 : Link power on (PHY/Link direct connection)
58	LKON	O	Link-on signal output Link-on signal is 6.1444 MHz clock output.
50	DIRECT	I	PHY/Link isolation barrier control input 0 : Isolation barrier 1 : PHY/Link direct connection

• Control Pins

No.	Pin Name	I/O	Function
26	PC0	I	Power class set input This pin status will be loaded to Pwr_class bit which allocated to PHY register 4H. IEEE1394a-2000 chapter [4.3.4.1]
27	PC1	I	
28	PC2	I	
30	CMC	I	Configuration manager capable setting This pin status will be loaded to Contender bit which allocated to PHY register 4H. 0 : Non contender 1 : Contender
55	RESETB	I	Power on reset input Connect to GND through a 0.1 µF capacitor. 0 : Reset 1 : Normal
61	SPD/BDB	I FNSel = 0	Speed select (UPD72852GB) 0 : MAX. S200 1 : MAX. S400
		O FNSel = 1	BIAS Detected output (Logical Inverse) 0 : BIAS is coming from some port. 1 : BIAS is not coming from any port.

• IC

No.	Pin Name	I/O	Function
29, 51	IC (AL)	–	Internally Connected (Low Clamped) Connected to GND.
3	IC (DL)	–	Internally Connected (Low Clamped) Connected to GND.

• Power Supply Pins

No.	Pin Name	I/O	Function
25, 31, 40, 47, 54	AV_{DD}	–	Analog power
24, 33, 35, 42, 49, 52, 53	AGND	–	Analog GND
4, 10, 20, 56, 60	DV_{DD}	–	Digital V_{DD}
1, 7, 13, 16, 21, 57, 64	DGND	–	Digital GND

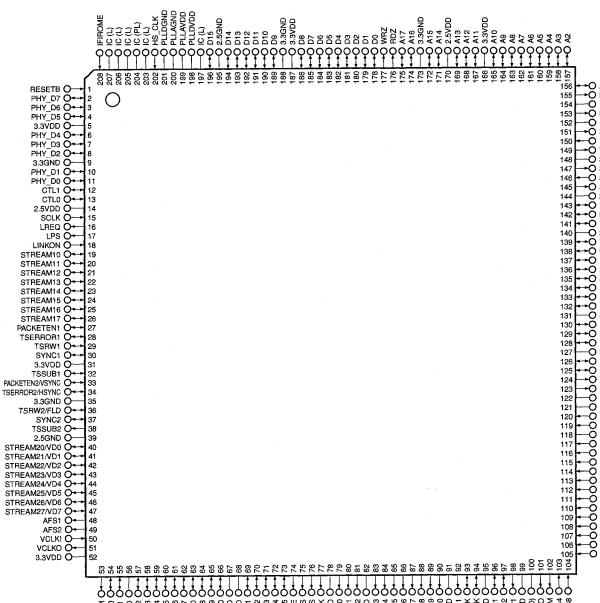
• Other Pins

No.	Pin Name	I/O	Function
41	TpBias0	O	Port 0 twisted pair output
48	TpBias1	O	Port 1 twisted pair output
34	RI1	–	Resistor connection pin 1 for reference current generator Please connect to GND pin through the 9.1 kΩ resistor.
23	XI	–	Crystal oscillator connection XI
22	XO	–	Crystal oscillator connection XO
62	FNSel	I	Function Select 0 : #61 acts as SPD (UPD72852GB compliant) 1 : #61 acts as BDB

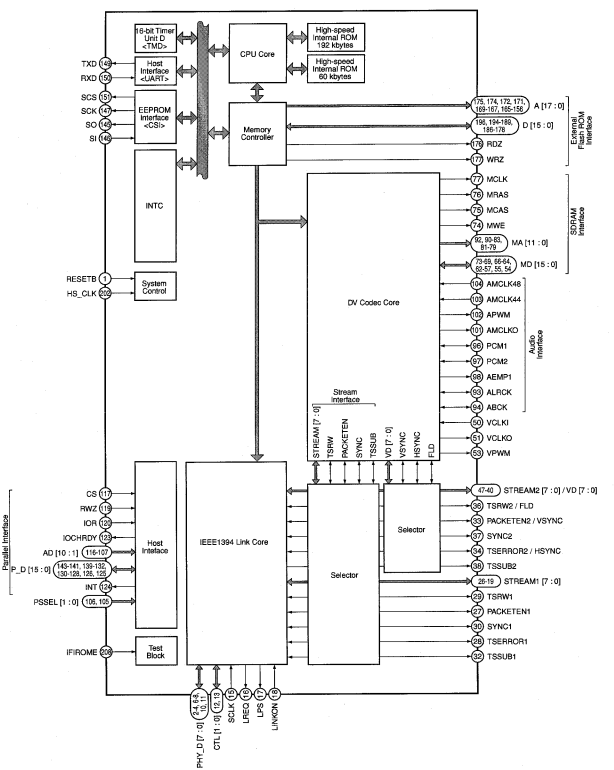
■ UPD72893AGD-LML (MAIN ASSY : IC5202)

- IEEE1394 Link IC

● Pin Arrangement



• Block Diagram



● Pin Function

(1) Link relation

No.	Pin Name	I/O	Function	Active
18	LINKON	I	Link-on signal input Clock input When LPS is active, input 0.	–
17	LPS	O	Link power status output Link power OFF : 0 Link power ON : 2.7 MHz pulse output (20 dividing of host clock 54 MHz)	–
16	LREQ	O	Link request output	–
15	SCLK	I	Clock input for Link control LPS is active : 49.152 MHz input LPS = 0 0 : fixed	–
12, 13	CTL [1 : 0]	I/O	PHY/Link control signal input/output	–
2-4, 6-8, 10,11	PHY_D [7 : 0]	I/O	Data input/output between PHY-Link	–
26-19	STREAM1 [7 : 0]	I/O	ISO data bus of stream interface 1	–
27	PACKETEN1	I/O	Packet enable signal input/output of stream interface 1	H/L
28	TSERROR1	I/O	Packet error signal input/output of stream interface 1	H/L
29	TSRW1	I/O	Data read/write enable signal input/output of stream interface 1	–
30	SYNC1	I/O	Frame synchronous signal input/output of stream interface 1	H/L
32	TSSUB1	I/O	Not used Connect to VDD or GND through a resistor.	H/L
47-40	STREAM2 [7 : 0]	I/O	ISO data bus of stream interface 2	–
33	PACKETEN2	I/O	Packet enable signal input/output of stream interface 2	H/L
34	TSERROR2	I/O	Packet error signal input/output of stream interface 2	H/L
36	TSRW2	I/O	Data read/write enable signal input/output of stream interface 2	–
37	SYNC2	I/O	Frame synchronous signal input/output of stream interface 2	H/L
38	TSSUB2	O	Not used Set to open.	–

(2) Video interface pins

No.	Pin Name	I/O	Function	Active
50	VCLKI	I	Video clock input (27 MHz)	–
51	VCLKO	O	Video clock output (27 MHz)	–
47-40	VD [7 : 0]	I/O	Video data signal	–
33	VSYNC	I/O	Video vertical sync. signal	L
34	HSYNC	I/O	Video horizontal sync. signal	L
36	FLD	I/O	Field index signal	–
53	VPWM	O	PWM signal for video PLL	–

(3) Audio interface pins

No.	Pin Name	I/O	Function	Active
104	AMCLK48	I	Audio master clock input for sampling frequency 48 kHz	–
103	AMCLK44	I	Audio master clock input for sampling frequency 44 kHz	–
101	AMCLKO	O	Audio master clock output	–
96	PCM1	I/O	Audio PCM serial data At 2ch : System 1 (data of audio block 1) At 4ch : System 1 The above is default setting value. Input/output data of PCM 1 and PCM 2 is replaced by Channel swap setting of an AUDIO_FUNC register.	–
97	PCM2	I/O	Audio PCM serial data At 2ch : Mute At 4ch : System 2 (data of audio block 2) The above is default setting value. Input/output data of PCM 1 and PCM 2 is replaced by Channel swap setting of an AUDIO_FUNC register. Note: Cannot use it in DV decode.	–
98	AEMP1	O	PCM1 emphasis ON/OFF in PCM 1 output	H
93	ALRCK	I/O	Audio LR clock L ch : High R ch : Low	–
94	ABCK	I/O	Audio bit clock	–
49, 48	AFS [2 : 1]	O	Audio sampling frequency AFS2 AFS1 44.1 kHz 0 1 48 kHz 0 0 32 kHz 1 0	–
102	APWM	O	PWM signal for audio PLL	–

(4) SDRAM interface pins

No.	Pin Name	I/O	Function	Active
77	MCLK	O	CLK pin connection of SDRAM	–
76	MRAS	O	RAS pin connection of SDRAM	–
75	MCAS	O	CAS pin connection of SDRAM	–
74	MWE	O	WE pin connection of SDRAM	–
92, 90-83, 81-79	MA [11 : 0]	O	Address pin connection of SDRAM	–
73-69, 66-64, 62-57, 55, 54	MD [15 : 0]	I/O	Data pin connection of SDRAM Note: Process of pull-up or pull down is necessary. So connect it to SDRAM directly.	–

(5) Host interface pins

(a) Parallel interface pins

No.	Pin Name	I/O	Function	Active
117	CS	I	Chip select input of parallel interface	L
119	RWZ	I	Read and write control input of parallel interface ISA type bus, SH-1 bus: Write strobe 68000 bus : Read/write selection signal	L
120	IOR	I	IO read control input of parallel interface ISA type bus, SH-1 bus : Read strobe 68000 bus : Data strobe (DS)	L
123	IOCHRDY	O	Ready output of parallel interface	L
116-107	AD [10 : 1]	I	Address input of parallel interface	–
143-141, 139-132, 130-128, 126, 125	P_D [15 : 0]	I/O	Data input/output of parallel interface	–

(b) Serial interface pins

No.	Pin Name	I/O	Function	Active
149	TXD	I/O	Serial transmission data output of unsynchronous serial interface (UART)	–
150	RXD	I/O	Serial transmission data input of unsynchronous serial interface (UART)	–

(c) Others

No.	Pin Name	I/O	Function	Active
124	INT	O	Interrupt output to the outside	H
106, 105	PSSEL [1 : 0]	I	Parallel/serial interface selection Input signal to select the outside interface which of parallel interface or serial interface. PSSEL [1 : 0] Select 00 Serial interface (UART) 01 Parallel interface (ISA type bus) 10 Parallel interface (68000 bus) 11 Parallel interface (SH-1 bus)	–

(6) External ROM connection pins

(a) Flash ROM interface pins

No.	Pin Name	I/O	Function	Active
196, 194-189, 186-178	D [15 : 0]	I/O	External ROM data bus Data bus in the external ROM access. Process of pull-up or pull down is necessary.	–
175, 174, 172, 171, 169-167, 165-156	A [17 : 1]	O	External ROM address bus Address bus in the external ROM access. Can addressing the 256k byte space.	–
176	RDZ	O	ROM read Strobe signal which shows a read cycle for external ROM. It becomes the inactive in the idle state.	L
177	WRZ	O	ROM write Strobe signal which shows a write cycle for external ROM.	L

(b) EEPROM interface pins

No.	Pin Name	I/O	Function	Active
145	SO	I/O	Serial transmit data output of clock-synchronous system serial interface (CSI)	–
146	SI	I/O	Serial receive data input of clock-synchronous system serial interface (CSI)	–
147	SCK	I/O	Clock output of clock-synchronous system serial interface (CSI)	–
151	SCS	I/O	Chip select output of clock-synchronous system serial interface (CSI)	–

(7) Clock and reset pins

No.	Pin Name	I/O	Function	Active
1	RESETB	I	Reset RESETB input is asynchronous input. When a signal of fixed low-level width is input without relation to an operation clock, take precedence of all operation, and reset the system. Note: RESETB is low-active.	L
202	HS_CLK	I	Host clock Clock input pin which is supplied to CPU core and built-in peripheral I/O. Please input 27 MHz clock. Perform 2 multiply with internal PLL by 27 MHz clock, 54 MHz clock is supplied to CPU core and internal peripheral I/O.	–

(8) Power supply and ground pins

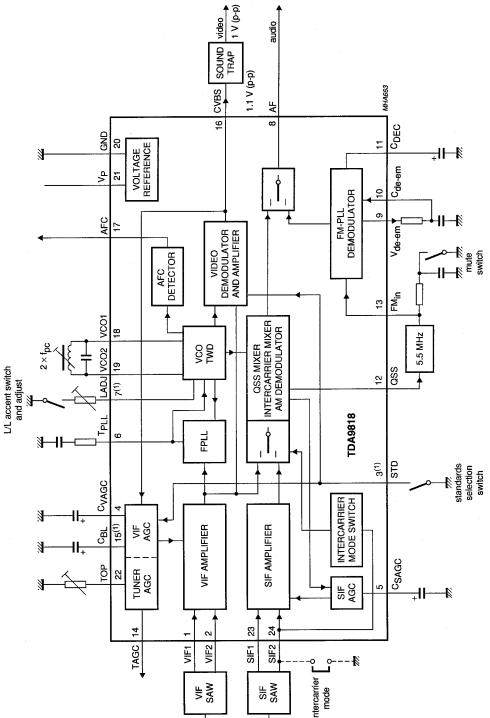
No.	Pin Name	I/O	Function	Active
5, 31, 52, 63, 78, 95, 127, 140, 166, 187	3.3VDD	–	3.3V power supply 3.3V positive power supply pins. Power supply for 3.3V interface I/O.	–
14, 67, 118, 170	2.5VDD	–	2.5V power supply 2.5V positive power supply pins. Power supply for internal each block.	–
39, 91, 144, 195	2.5GND	–	Ground pins Connect all GND pins to the common ground.	–
9, 35, 56, 68, 82, 99, 131, 148, 173, 188	3.3GND			–
199	PLLAVDD	–	Analog power supply for multiply circuit Analog positive power supply pin for PLL. Supply 2.5V.	–
200	PLLAGND	–	Analog ground for multiply circuit Analog ground for PLL	–
198	PLLDVDD	–	Digital power supply for multiply circuit Digital positive power supply pin for PLL. Supply 2.5V.	–
201	PLLDGND	–	Digital ground for multiply circuit Digital ground for PLL	–
121	IC (H)	–	Internally connected pin Connect to VDD directly.	–
197, 203, 205-207	IC (L)	–	Internally connected pin Connect to ground directly.	–
152, 154, 204	IC (PL)	–	Internally connected pin Connect to ground through a resistor.	–
100, 122	IC (O)	–	Internally connected pin Set to open.	–

(9) Others

No.	Pin Name	I/O	Function	Active
153	DV_INT	I/O	Interrupt pin to the outside for the DV status read out.	H
155	BR_MON	I/O	Shows the bus reset occurred. There is some delay after real bus reset occurred because of set by the built-in firmware.	H
208	IFIROME	I	ROM operation selection input Set to 1 normally.	–

TDA9818TS (TUJB ASSY : IC3903)

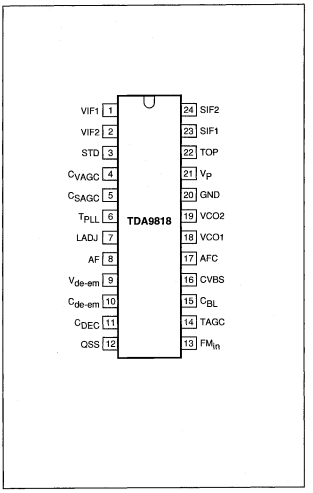
• VIF/SIF IC



● PIN FUNCTION

SYMBOL	PIN	DESCRIPTION
VIF1	1	VIF differential input signal voltage 1
VIF2	2	VIF differential input signal voltage 2
STD	3	standards selection switch; note 1
C_{VAGC}	4	VIF AGC capacitor
C_{SAGC}	5	SIF AGC capacitor
T_{PLL}	6	PLL filter
LADJ	7	L/L accent switch and adjust
AF	8	audio output
$V_{de\text{-}em}$	9	de-emphasis output
$C_{de\text{-}em}$	10	de-emphasis input
C_{DEC}	11	decoupling capacitor
QSS	12	single reference QSS/intercarrier output voltage
FM_{in}	13	sound intercarrier input voltage
TAGC	14	tuner AGC output
C_{BL}	15	black level detector
CVBS	16	composite video output voltage
AFC	17	AFC output
VCO1	18	VCO1 resonance circuit
VCO2	19	VCO2 resonance circuit
GND	20	ground
V_P	21	supply voltage
TOP	22	tuner AGC takeover point adjust
SIF1	23	SIF differential input signal voltage 1
SIF2	24	SIF differential input signal voltage 2

● PIN LAYOUT



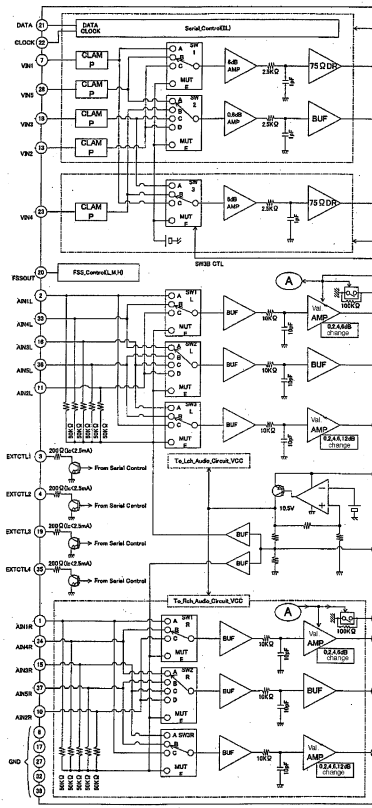
■ LA73026AV (SCRB ASSY : IC101)

• Dual SCART Interface IC

● Pin Function

No.	Pin Name	DC Voltage	Function
1 2 10 11 15 16 33 34 36 37	AIN1R AIN1L AIN2R AIN2L AIN3R AIN3L AIN4L AIN4R AIN5L AIN5R	5.58V	Audio input terminal
3 4 19 35	EXTCTL1 EXTCTL2 EXTCTL3 EXTCTL4	2.5mA, ON →0.75V OFF →OPEN	General purpose output Opencollector
5	VOUT	1.10V	Video output terminal Push-pull output/Low-impedance
6 17 27 32 38	GND GND EXT-75ΩDR-GND DEC-75Ω-GND GND	0V	
7 13 18 23 28	VIN1 VIN2 VIN3 VIN4 VIN5	1.8V	Video input terminal Sync-tip clamp Input/Hi-impedance
8	PWRSAV	0.2V	Power save mode select pin OPEN : L
9	AUMUTE	0.05V	Control terminal for audio mute OPEN : L
12	REFFIL	4.94V	Terminal for Ref_DC ripple removing
14	VCC12		Vcc for audio
20	FSSOUT	H : Vcc-0.5V M : 6V L : 0V	FSS control terminal Output H, M, L 3 values with serial control
21	DATA		Confirmed to IIC BUS. Data input terminal
22	CLOCK		Confirmed to IIC BUS. Clock input terminal
24	VCC5A		Control Vcc for Video
25 26	VOUT75A VOUT75B	1.10V	Video driver output terminal Push-pull output/Low-impedance
29	VCC5B		Always VCC for Video
30 31 42 43	AOUT2L AOUT2R AOUT3L AOUT3R	4.91V	Audio output terminal Push-pull output/Low-impedance
39 40	AOUT1L AOUT1R	4.91V	Audio output terminal Push-pull output/Low-impedance
41 44	PWRMUTE1 PWRMUTE2	0V	Output terminal of audio muting

● Block Diagram



7.4 OUTLINE OF THE PRODUCT

■ Main newly developed technologies

1. Pickup

The pickup supports quadruple-speed recording for the DVD-R/RW.
A liquid-crystal tilt servo system is adopted for the pickup.

2. Recording-signal-processing LSI

• UPD3320GC (DRIVE Assy: IC101)
The recording-signal-processing module of conventional models consists of two chips, but this has been integrated into a single newly developed recording-signal-processing LSI, enabling stable performance and cost reduction.

3. AV-signal-processing LSI

• M65672WG-B (MAIN Assy: IC1001)
The AV-signal-processing module of conventional models consists
of eleven chips, but this has been integrated into a single newly developed AV-signal-processing LSI, enabling large-scale cost reduction while maintaining the conventional functions. In the new LSI, all the basic functions necessary for a DVD recorder have been integrated. Like conventional models, this model is designed to support multitasking. The main functions are as follows:

- 3-D Y/C separation
- Video decoding
- Frame TBC
- MPEG video encoding
- Dolby Digital Consumer Encoding
- ATA/ATAPI I/F (2 ch)
- Main CPU (32-bit RISC, 54 MHz)
- Graphics engine (OSD, scaling, mixing)
- MPEG video decoding
- Audio decoding (AC-3, MPEG)
- Video encoding
- Progressive conversion
- Audio I/F
- 3-D DNR for playback

4. DV-signal-processing LSI

The DV-signal-processing LSI consists of the following two chips:
• UPD72862AGB-SEU (MAIN Assy: IC5101)
A 400-Mbps two-port PHY LSI in compliance with the IEEE1394a-2000 standards

• UPD72893AGD-LML (MAIN Assy: IC5202)
An EEE1394 link controller LSI having DV (digital video) encoding/decoding functions. Encoding/decoding of digital video signals in compliance with the SD specifications (NTSC/PAL) of the DV standard is supported. The 32-bit RISC CPU is built in for controlling the IEEE1394 bus and sending/receiving AV/C commands.

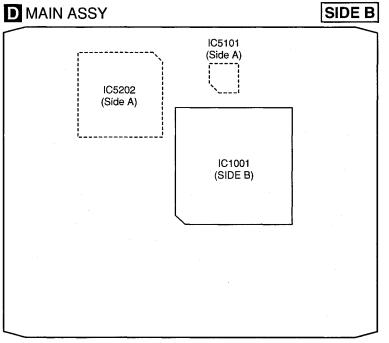


Fig.1 MAIN Assy

System configuration

In each signal-processing LSI of the main function blocks, various processes have been integrated into one chip, which enables simpler system configuration. With the AV-signal-processing LSI at the center, video inputs/outputs, audio inputs/outputs, DV inputs/outputs, writer, HDD, and various memory cells are connected to it.

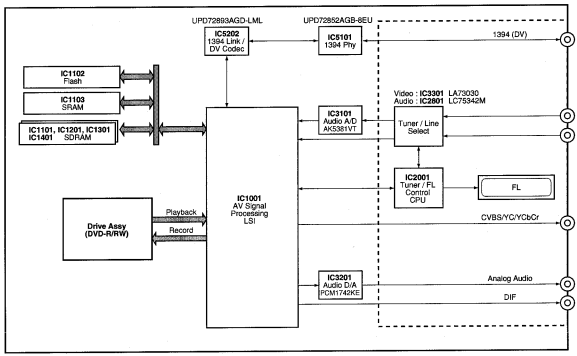


Fig2. System configuration

■ New functions and specifications

In this model, the following new functions and specifications have been included in addition to those of conventional models:

1. Improved multitasking functions

As both the HDD and DVD drive are mounted in this model, like conventional models, the unit is designed to support various multitasking. Furthermore, this model supports DVD multitasking (only in VR mode), which was impossible with conventional models.

ⓐ Pursuit playback
Playback of the title being recorded by the DVD drive in VR mode or the HDD is supported.

ⓑ Simultaneous recording/playback 1
Playback of a title other than that being recorded by the DVD drive in VR mode or the HDD is also supported.

ⓒ Simultaneous recording/playback 2
DVD playback during HDD recording is supported.

ⓓ Simultaneous recording/playback 3
HDD playback during DVD recording is supported.

ⓔ Recording during high-speed dubbing
HDD recording during high-speed dubbing from the HDD to a DVD is supported.

ⓕ Playback during high-speed dubbing
Playback of an HDD title during high-speed dubbing from the HDD to a DVD is supported.

2. Improved dubbing functions

High-speed dubbing and normal-speed dubbing are supported, as with conventional models. A one-touch dubbing function that enables automatic selection between these dubbing functions is also provided. In this model, high-speed dubbing from a DVD (in VR mode) to the HDD is also an added capability.

3. Disc backup

The function of creating a backup disc for a disc recorded in Video mode is added. The data of the original DVD are transferred to the HDD, then retransferred to the DVD drive, and because no reencoding is required during data transmission between the drives, a backup disc with no degradation of video and audio signals can be created.

4. Advanced disc NAVI

In the conventional disc NAVI function, recorded titles are displayed with still pictures as a list. In the advanced disc NAVI function, the title selected with the cursor is displayed as an animated picture with sound.

5. Improved Still Picture menu in Video mode

The disc NAVI function, which enables displaying a list of recorded titles with still pictures, is enabled in Video mode with this model. Selection from among nine title menus is also supported.

6. Adoption of MPEG2 SIF

In MN1-6 modes, MPEG2 SIF has been adopted, instead of the MPEG1 SIF of conventional models. This enables higher-quality recording for longer hours.

7. Improved editing functions

For DVD, the original/play-list editing in DVD-VR mode available with conventional models is provided.
For HDD editing, play-list-editing functions almost the same as for the DVD-VR, such as title combination, separation, and partial erasure, are enabled for the HDD with this model. With conventional models, these edit functions are available only for the dubbing list. The automatic-chapter-mark-insertion function in response to a change in audio type (stereo, monaural, bilingual) makes commercial-cutting editing easier.

8. Various-format playback

Playback of WMA, MP3, and JPEG formats is supported.

9. Other functions and specifications

The following main functions and specifications adopted with conventional models are also provided with this model:
- 192-kHz, 24-bit DAC
- 48-kHz, 20-bit ADC
- Digital 3-D Y/C separation circuit
- Digital frame TBC
- 3-D DNR
- DV (iLink) input/output (DVR-610H)
- Built-in BS tuner (DVR-510H/515H/610H)
- Playback with commercials skipped
- CD/video-CD playback
- Picture creation
- Recording with 3/4-D1 and 2/3-D1 resolutions
- Recording mode with 32-step MNs
- LPCM recording
- High-resolution GUI
- Progressive output
- SRS TruSurround

7.5 DISC/CONTENT FORMAT PLAYBACK COMPATIBILITY

Disc / content format playback compatibility

General disc compatibility

This recorder was designed and engineered to be compatible with software bearing one or more of the following logos:

Fujicolor CD

Also compatible with KODAK Picture CD

is a trademark of Fuji Photo Film Co. Ltd.

This recorder supports the IECIs Super VCD standard. Compared to the Video CD standard, Super VCD offers superior picture quality, and allows two soundtracks to be recorded. Super VCD also supports the widescreen size.

Super Video CD (Super VCD)

Other formats, including but not limited to the following, are not playable in this recorder:

DVD-Audio / SACD / DVD-RAM

DVD-ROM / CD-ROM*

** Except those that contain WMA, MP3 or JPEG. See also Compressed audio compatibility and JPEG file compatibility below.*

DVD-R/RW and CD-R/RW discs recorded using a DVD recorder, CD recorder or personal computer may not be playable in this recorder. This may be caused by a number of possibilities, including but not limited to: the type of disc used; the type of recording; damage, dirt or condensation on either the disc or the pick-up lens. See below for notes about particular software and formats.

DVD-R/RW compatibility

This recorder will play and record DVD-R/RW discs that use DVD-Video format (Video mode), and DVD-RW discs that use the Video Recording (VR) format. It is compatible with DVD-RW Ver. 1.1 and Ver. 1.1 / 2x, and DVD-R Ver. 2.0 and Ver. 2.0 / 4x.

CD-R/RW compatibility

This recorder will play CD-R and CD-RW discs recorded in CD Audio or Video CD format, or as a CD-ROM containing MP3, WMA or JPEG files. However, any other content may cause the disc not to play, or create noise/distortion in the output.

This recorder cannot record CD-R or CD-RW discs.

PC-created disc compatibility

If you record a disc using a personal computer, even if it is recorded in a "compatible format" as listed above, there will be cases in which the disc may not be playable in this recorder due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

WMA (Windows Media Audio) compatibility

The Windows Media logo printed on the box indicates that this recorder can playback WMA data.

WMA is short for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA data can be encoded by using Windows Media Player version 9 (or less) or Windows Media Player for Windows XP.

Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.

Compressed audio compatibility

This recorder will play CD-ROM, CD-R, and CD-RW discs containing files saved in the MPEG-1 Audio Layer 3 (MP3) or Windows Media Audio (WMA) format with a sampling rate of 44.1 or 48kHz. Incompatible files will not play and the message **Cannot play this file format** will be displayed (**CANIT PLAY** in the front panel display).

Fixed bit-rate MP3 files are recommended. Variable bit-rate (VBR) MP3 files are playable, but playing time may not be shown correctly.

This recorder is compatible with 44.1 and 48 kHz WMA files encoded with Windows Media Codec 8. Files encoded using Windows Media Codec 9 may be playable, but some parts of the specification are not supported (specifically, Pro, Lossless, Voice and VBR WMA files).

DRM (Digital Rights Management) copy protection is a technology designed to prevent unauthorized copying by restricting playback, etc. of material on devices other than the PC (or other WMA recording equipment) used to record it. For detailed information, please see the instruction manuals or help files that came with your PC (or other WMA recording equipment) and/or software.

WMA files encoded with DRM (Digital Rights Management) copy protection will not play and the message **Cannot play this file format** will be displayed (**CANIT PLAY** in the front panel display).

The CD-ROM used to compile your WMA/MP3 files must be ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1, Romeo and Joliet file systems are both compatible with this recorder.

Use CD-R or CD-RW media for recording your files. The disc must be finalized (i.e. the session must be closed) in order to play in this recorder.

This recorder only plays tracks that are named with the file extension .MP3 or .WMA (upper or lower-case).

When naming MP3 and WMA files, add the corresponding file name extension (.mp3 or .wma). Files are played according to the file extension. To prevent noise and malfunctions, do not use these extensions for other kinds of files.

This recorder can recognize up to 99 folders and 999 files (WMA/MP3). If a disc exceeds these limits, only files and folders up to these limits will be playable. Files and folders are read/displayed in alphabetical order. Note that if the file structure is very complex, you may not be able to read/play all files on the disc.

Folder, track and file names (excluding the file extension) are displayed.

There are many different recording bit-rates available to encode MP3 files. This recorder has been designed to be compatible with all of them. Audio encoded at 128Kbps should sound close to regular CD Audio quality. This recorder will play lower bit-rate files, but please note that the sound quality becomes noticeably worse at lower bit-rates.

JPEG file compatibility

This recorder is compatible with Fujicolor CD and Kodak Picture CD formats, as well as CD-R/RW/ROM discs containing JPEG files.

Baseline JPEG and EXIF 2.2*1 still image files are supported (horizontal resolution from 160ñ5120 pixels; vertical resolution between 120ñ3840 pixels).

*1 *File format used by digital still cameras*

The CD-ROM used to compile your JPEG files must be ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1, Romeo and Joliet file systems are both compatible with this recorder.

This recorder only displays files that are named with the file extension .jpg, .jpeg, .jif, or .jfif (upper or lower-case).

The recorder can load up to 99 folders and 999 files at one time. If there are more files/folders than this on the disc then more can be reloaded.

7.6 CAUTIONS ON HANDLING THE HDD

(1) Cautions on Handling the HDD

- The HDD is very sensitive to shocks and vibrations. Care must be taken especially during operation (when the power is on).
- The HDD is very sensitive to electrostatic charges.
- Rapid change in temperature or humidity may cause deterioration of the HDD.

Note: After receiving damage caused by any above-mentioned factors, the HDD may operate normally for dozens or some hundreds of hours but then suddenly crash. If you are certain you have damaged a new repair part (HDD) while making repairs, do not use the part.

The HDD is about 10 times as sensitive to shock during operation than during nonoperation.

Reference: Main specifications on damage to the HDD

	During operation	During nonoperation
Shock G (acceleration)	<approx. 20 G	<approx. 200 G
Temperature change	< 20°C/hour	
Moisture change	< 20%/hour	

Reference: Estimate value of falling distance vs. shock (G) when the HDD is dropped without protection

Falling distance \ Landing surface	Granite surface	Concrete floor	Synthetic-resin-coated table	Antistatic sponge
0.5 inch / 12.7 mm	387	217	200	26
1.0 inch / 25.4 mm	595	457	310	37
2.0 inch / 50.8 mm	1133	600	680	70
4.0 inch / 101.6 mm	1795	1040	1050	267

(2) Cautions on handling the product on which the HDD is mounted or the HDD as a repair part, and examples of dangerous handling

[Cautions on handling the product on which the HDD is mounted]

- While the unit is turned on, the HDD is always in operation. Be sure NOT to impart shock to the unit.

● Examples of dangerous handling: while the power is on

- Bumping on the bonnet
- Dropping an object, such as a small screwdriver or remote control unit, onto the bonnet, or bumping an object against the cabinet
- Moving the unit by dragging
- Stacking another product on the unit

Note: Be sure NOT to impart shock, such as bumping or hitting a screwdriver against the HDD, during diagnosis with the bonnet open.

● Examples of dangerous handling: while the power is off

- Imparting strong shock, although the HDD is more resistant to shock when the power is off
- Dropping the unit from a height of several centimeters, or after lifting one side of the unit up, then letting the unit drop.

- Do NOT move the unit immediately after the power is turned off. Wait at least 30 seconds after the indication on the FL display changed from POWER OFF to the clock indication before moving the unit.
  If the AC power cord is accidentally disconnected before turning the unit off, wait at least for one minute before moving it. In this case, damage to the HDD caused by sudden shutoff may be small, because the emergency relief mechanism is activated. However, if sudden shutoff occurs during recording or playback, recorded data may be damaged. Be sure to check operations.

[Cautions on handling the HDD as a repair part]

1. Handle the HDD in a safe environment:
   - Handle the HDD over an antistatic pad that can also absorb shock.
   - Wear wrist bands to prevent electrostatic charges generated in your body from affecting the HDD.

2. The following must be observed when handling the HDD:
   - Handle one HDD at a time. Do NOT hold several HDDs at the same time.
   - Grip the HDD on both sides so that you do not touch its terminals or circuit boards.
   - Do NOT stack one HDD onto another HDD (even if the HDDs are protected in antistatic bags).
   - Do NOT bump the HDDs against one another.
   - Do NOT bump any tool, such as a screwdriver, or other hard object against the HDD.
   - When a repair part (HDD) is transported and there is a large temperature difference between outdoors and indoors, to the indoor, leave it in its package for about a half day to gradually cool or warm the HDD to room temperature before unpacking it.

[Notes on packing for shipment]

- When returning a defective HDD for analysis, handle with care as if it were a good product. Otherwise, the results of analysis may not be correct.
- When packing, use the antistatic bag and packing materials in which the repair part for service was delivered. Attach a copy of the slip for service or a memo stating symptoms in as much detail as possible.

■ Outline and part No. of the HDDs

*Pioneer's part No. is not stamped.

Model Name	Capacity	Maxtor		Western Digital		Seagate	
		Pioneer's Part No. (for service)	Manufacture's Part No.	Pioneer's Part No. (for service)	Manufacture's Part No.	Pioneer's Part No. (for service)	Manufacture's Part No.
DVR-510H-S	80GB	VXF1010	4R080L0-	VXF1030	WD800LB-	VXF1036	ST38001□ACE-

- When replacing the HDD, carefully check the capacity and manufacturer's part No. on the part label to avoid replacing with a similar but inappropriate product. You can also check the model No. of the mounted HDD on the Service mode screen.
- Do NOT use repair parts, such as commercially available HDDs, other than those designated above, as their functions, performance or reliability cannot be guaranteed.

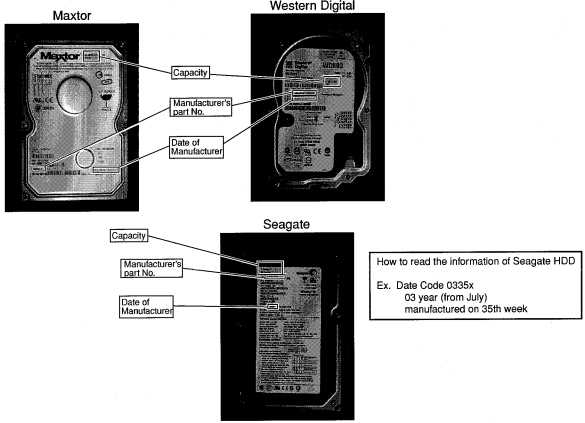
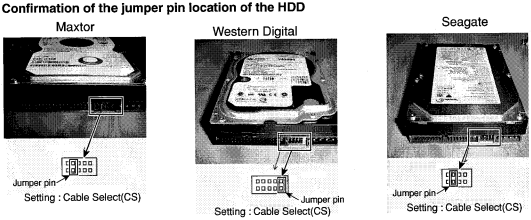


Fig.1 Location of the data on capacity and part No. of the HDD

■ Confirmation of the jumper pin location of the HDD



7.7 CLEANING

Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

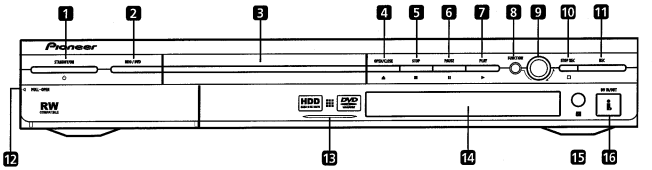
Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008

8. PANEL FACILITIES

8.1 FRONT SECTION

Front panel



1 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

2 HDD/DVD
Press to switch between hard disk drive (HDD) and DVD for recording and playback.

3 DVD disc tray

4 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

5 ■ STOP
Press to stop playback.

6 ❚❚ PAUSE
Press to pause/restart playback or recording.

7 ► PLAY
Press to start or restart playback.

8 FUNCTION
Press repeatedly to set the function of the **SMART JOG** dial. The function is shown in the display.

9 SMART JOG dial

10 □ STOP REC
Press to stop recording.

11 ● REC
Press to start recording.

12 Front panel inputs
Pull the cover down where indicated to access the front panel input jacks. Especially convenient for connecting camcorders and other portable equipment.

13 HDD indicator
Lights when the HDD is selected for playback/recording.

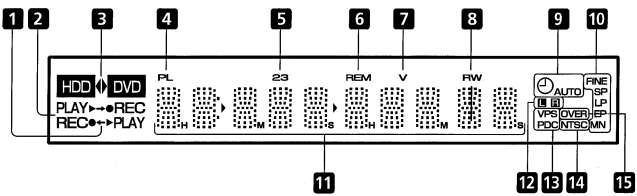
14 Front panel display

15 IR remote sensor

16 DV IN/OUT jack
Digital input/output jack for use with a DV camcorder.

8.2 DISPLAY

Display



1 ← / →
Arrows indicate the copy direction between the HDD (HDD) and DVD (DVD).

2 ► PLAY / ● REC indicators
Lights during playback / recording; blinks when playback / recording is paused.

3 HDD ◄ ► DVD
The '◄' and '►' indicators light to indicate that the HDD or DVD is selected for recording/playback.

4 PL
Lights when a VR mode disc is loaded and the recorder is in Play List mode.

5 23
Shows the remote control mode (if nothing is displayed, the remote control mode is 1).

6 REM
Lights when the character display is showing the remaining available recording time.

7 V
Lights when an unfinalized Video mode disc is loaded.

8 R / RW
Indicates the type of recordable DVD loaded: DVD-R or DVD-RW.

9 ⏲
Lights when a timer recording has been set. (Indicator blinks if the timer has been set to DVD but there isn't a recordable disc loaded, or the timer has been set to HDD but the HDD is not recordable.)

AUTO
Lights when Auto Start Recording has been set, and during Auto Start Recording.

10 Recording quality indicators

FINE
Lights when the recording mode is set to **FINE** (best quality).

SP
Lights when the recording mode is set to **SP** (standard play).

LP
Lights when the recording mode is set to **LP** (long play).

EP
Lights when the recording mode is set to **EP** (extended play).

MN
Lights when the recording mode is set to **MN** (manual recording level) mode.

11 Character display

12 L R
Indicates which channels of a bilingual broadcast are recorded.

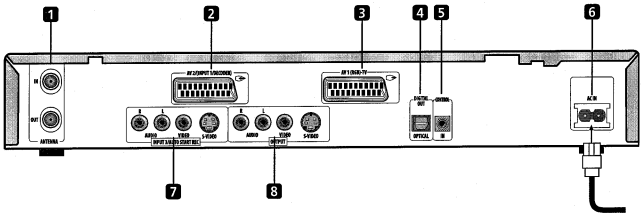
13 VPS / PDC
Lights when receiving a VPS/PDC broadcast during a VPS/PDC-enabled timer recording.

14 NTSC
Lights when playing NTSC format video.

15 OVER
Lights when the analog audio input level is too high.

8.3 REAR PART

Rear panel connections



1 ANTENNA IN/OUT
Connect your TV antenna to the **ANTENNA IN** jack. The signal is passed through to the **ANTENNA OUT** jack for connection to your TV.

2 AV2/(INPUT 1/DECODER) AV connector
Audio/video input SCART-type connector for connecting to a VCR, or other equipment with a SCART connector. The input accepts video and S-video.

3 AV1(RGB)-TV AV connector
Audio/video output SCART-type connector for connecting to a TV or other equipment with a SCART connector. The video output is switchable between video, S-video and RGB.

4 DIGITAL OUT OPTICAL
For connecting to an AV receiver, Dolby Digital/DTS/MPEG decoder or other equipment with optical digital input.

5 CONTROL IN
Use to control this recorder from the remote sensor of another Pioneer component with a **CONTROL OUT** terminal and bearing the Pioneer ⊞ mark. Connect the **CONTROL OUT** of the other component to the **CONTROL IN** of this recorder using a mini-plug cord.

6 AC IN – Power inlet

7 INPUT 3/AUTO START REC jacks
Audio/video inputs (stereo analog audio; video and S-video) that you can use to connect to a satellite receiver, TV, VCR or other source component for recording.

8 OUTPUT jacks
Audio/video outputs (stereo analog audio; video and S-video) that you can use to connect to a TV, monitor, AV receiver or other equipment.

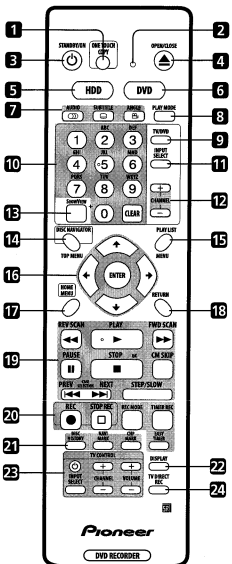
Front panel connections

On the left side of the front panel a flip-down cover hides a second audio/video input, consisting of a video and S-video jack, and stereo analog audio jacks. (You can also connect a mono source using just the **L(MONO)** jack.)

On the right side is the DV input/output i.LINK connector. This is for connection to a DV camcorder.

8.4 REMOTE CONTROL

Remote control



1 ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

2 Remote control indicator
Lights when setting up the remote control for use with a TV and when setting the remote control mode.

3 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

4 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

5 HDD
Press to select the hard disk (HDD) for recording or playback.

6 DVD
Press to select the DVD for recording or playback.

7 DVD playback functions

AUDIO
Changes the audio language or channel. (When the recorder is stopped, press to change the tuner audio.)

SUBTITLE
Displays/changes the subtitles included in multilingual DVD-Video discs.

ANGLE
Switches camera angles on discs with multi-angle scenes.

8 PLAY MODE
Press to display the Play Mode menu (for features such as search, repeat and program play).

9 TV/DVD
Press to switch between 'TV mode', in which you get the picture and sound from the TV's tuner, and 'DVD mode', in which you get picture and sound from the recorder's tuner (or an external input).

10 Alphanumeric buttons and CLEAR
Use the number buttons for track/chapter/title selection; channel selection, and so on. The same buttons can also be used to enter names for titles, discs and so on.

Use **CLEAR** to clear an entry and start again.

11 INPUT SELECT
Press to change the input to use for recording.

12 CHANNEL +/–
Press to change the channel of the built-in TV tuner.

13 SHOWVIEW
Press, then use the number buttons to enter a ShowView programming number for timer recording.

14 DISC NAVIGATOR / TOP MENU

Press to display the Disc Navigator screen, or the top menu if a DVD-Video disc is loaded.

15 PLAY LIST / MENU
Press to switch between Original and Play List content on VR mode discs, or display the disc menu if a DVD-Video disc is loaded.

16 ↑/↓/←/→ (cursor buttons) and ENTER
Used to navigate all on-screen displays. Press **ENTER** to select the currently highlighted option.

17 HOME MENU
Press to display the Home Menu, from which you can navigate all the functions of the recorder.

18 RETURN
Press to go back one level in the on-screen menu or display.

19 Playback controls

◄◄ REV SCAN / FWD SCAN ►►
Press to start reverse or forward scanning. Press again to change the speed.

► PLAY
Press to start playback.

II PAUSE
Press to pause playback or recording.

■ STOP
Press to stop playback.

CM SKIP
Press to skip 30 seconds forward on the disc (about the length of a typical TV commercial); press repeatedly to skip up to 4 minutes.

I◄◄ PREV / NEXT ►►I
Press to skip to the previous or next title/chapter/track/folder; or to display the previous or next menu page.

◄II STEP/SLOW II►
During playback, press to start slow-motion playback; while paused, press to show the previous or next video frame.

20 Recording controls

● REC
Press to start recording. Press repeatedly to set the recording time in blocks of 30 mins.

□ STOP REC
Press to stop recording.

REC MODE
Press repeatedly to change the recording mode (picture quality).

TIMER REC
Press to set a timer recording from the standard Timer Recording screen.

EASY TIMER
Press to set a timer recording from the Easy Timer screen.

21 DISC HISTORY
Press to display summary information (disc name, recording time left, etc.) from the last 30 recordable discs loaded.

NAVI MARK
Press to select a thumbnail picture for the current title for use in the Disc Navigator screen.

CHP MARK
Press to insert a chapter marker when playing/recording a VR mode DVD-RW disc or the HDD.

22 DISPLAY
Displays/changes the on-screen information displays.

23 TV CONTROL
After setting up, use these controls to control your TV.

24 TV DIRECT REC
Press to start recording whatever channel your TV is set to.

A

B

C

D

E

F

■ Jigs list

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	diagnosis
DVD Recorder Data Disc	GGV1134	diagnosis (ID data setting)
ATAB Assy	VWV1968	Diagnosis of HDD
Flexible Cable (40P)	VDA1977	Diagnosis of HDD
DVD Test Disc (DVD-Video)	GGV1025	Check of DVD-Video